ICT-enabled Connectedness: Implications for Sharing Economy and Communication Contexts

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Declaration of Authorship

I hereby declare that the submitted thesis is my own work. All quotes, whether word by word or in my own words, have been marked as such.

The thesis has not been published anywhere else nor presented to any other examination board.

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Die Arbeit wurde bisher weder einer anderen Prüfungsbehörde vorgelegt noch veröffentlicht.

Olga Abramova

Darmstadt, 10.10.2019

Dedicated to my family
and friends,

for being the
pillows, role models, catapults,
cheerleading squad and sounding boards
I have needed.

Abstract

The advent of the Internet and other modern ICTs has culminated in a "global village," where people can interact with others across the globe as if they were living next door. This ICT-enabled connectedness has brought opportunities for the creation of new forms of exchange. Companies like YouTube, Alibaba or BlaBlaCar have successfully adopted a novel way of structuring their businesses – a platform model - by shifting organizational design away from selling products towards the facilitation of exchanges between two or more (related) user groups (e.g., content creators and audience in case of Youtube, sellers and buyers for Alibaba, riders and drivers in case of BlaBlaCar). This thesis focuses on two main areas that are affected by the transformation engendered by the ICT-enabled connectedness – business and communication.

First, it discusses the sharing economy as a new economic paradigm that disrupted the traditional ownership model by leveraging peer-to-peer technological platforms to facilitate the exchange of resources. While many practitioners have presaged the sharing economy to open significant opportunities for a more sustainable and open society, some experts questioned the potentially devastating future of such peer-to-peer deals, drawing particular attention to the amplified information asymmetries. Prior research has explored uncertainty as a significant source of information asymmetry, mainly in e-commerce (e.g., eBay). Focusing on the unique contextual characteristics of sharing transactions (e.g., absence of ownership transfer, service orientation and intense interaction among parties), seven papers respond to an apparent urgency for systematic and thorough scrutiny of the sources and consequences of uncertainty in this particular domain.

Paper A conceptualizes uncertainty in sharing arrangements by building on information asymmetry theory and extends it from supplier and resource to collaboration. We construct and validate a theoretical model that includes the antecedents, nature, and consequences of uncertainty. Building on the fact that ambiguity can be reduced with information, Paper B investigates the effectiveness and monetary value of the information cues commonly used by

sharing platforms via a discrete choice experiment methodology. Acknowledging the potentially adverse effect of such cues as negative reviews, peer-to-peer sharing platforms have readily embraced the "response" option, empowering providers with the opportunity to challenge, deny or at least apologize for the subject of critique. Leaning on communication theory, Paper C explores the impact of different response strategies and review negativity on trusting beliefs towards the provider in accommodation sharing settings. Extending this line of research, Paper D, as a practice-oriented article, highlights the implications of negative reviews on the host's image and willingness to rent a room. Lastly, Paper E reverses the perspective and affirms the receptivity of suppliers to the cues sent from the consumer's side. As such, it uncovers the impact of different self-presentation strategies of an applicant on the host's decision to accept a request from a stranger on a peer-to-peer sharing platform.

Second, this thesis debates the implications of the ICT-enabled connectedness in the interpersonal communication context. The pervasive use of ICTs (especially smartphones) makes a difference in the ways we maintain and develop relationships, disclose things to each other, and exchange information. Users' attachment to their smartphones, which often serve to engage with social media, evidenced detrimental intra- and interpersonal consequences, including negative emotions like envy, anger, depression and conflicts among conversational partners. To this end, two papers of the dissertation challenge the frequently promoted euphoria regarding the permanent "connectedness." Specifically, the phenomenon of snubbing an interlocutor when using the smartphone in his or her company, coined as "phubbing," motivations behind this behavior and the effect on communicational outcomes in education and relationship contexts have been investigated. Paper F focuses on the academic environment and demonstrates how interruptions through ICT undermine two key learning modalities – visual and auditory attention. Paper G investigates excessive smartphone use in a romantic context. We construct and validate a conceptual model that posits ignoring a partner with the smartphone as a predictor of adverse relationship outcomes through triggering feelings of jealousy.

Implications for future research and practitioners are extensively discussed for each article and recapped in the final chapter.

Zusammenfassung

Das Aufkommen des Internets und anderer moderner IKT hat in einem „globalen Dorf“ seinen Höhepunkt erreicht, in dem Menschen mit anderen auf der ganzen Welt interagieren können, als ob sie nebenan wohnen würden. Die IKT-gestützte Vernetzung hat Möglichkeiten zur Schaffung neuer Formen des Austauschs eröffnet. Unternehmen wie YouTube, Alibaba oder BlaBlaCar haben erfolgreich eine neuartige Art der Unternehmensstrukturierung - ein Plattformmodell - eingeführt, indem sie die organisatorische Gestaltung weg vom Verkauf von Produkten in Richtung der Förderung des Austauschs zwischen zwei oder mehreren (verwandten) Benutzergruppen verlagert haben (z. B. Content Creator und Publikum bei YouTube, Verkäufer und Käufer von Alibaba, Fahrer und Mitfahrer bei BlaBlaCar). Diese Dissertation konzentriert sich auf zwei Hauptbereiche, die jene Transformation erfahren haben, die durch die ICT-gestützte Vernetzung hervorgerufen wurde - Business und Kommunikation.

Zunächst wird die Sharing Economy als neues wirtschaftliches Paradigma erörtert, welches das traditionelle Eigentumsmodell disruptiv verändert hat, indem durch den Einsatz von Peer-to-Peer-Plattformen der Austausch von Ressourcen erleichtert wurde. Während viele Praktiker davon ausgegangen sind, dass die Sharing Economy bedeutende Chancen für eine nachhaltigere und intelligentere Gesellschaft eröffnen würde, haben einige Experten die potenziell verheerende Zukunft solcher Peer-to-Peer-Deals zur Diskussion gestellt und dabei insbesondere auf die verstärkten *Informationsasymmetrien* hingewiesen. Frühere Forschungen haben Unsicherheit als eine signifikante Quelle von Informationsasymmetrie untersucht, insbesonders im Onlinehandel (z.B. eBay). In sieben Beiträgen werden Argumente für die einzigartigen Merkmale von geteilten Transaktionen (z.B. fehlende Eigentumsübertragung, Serviceorientierung und intensive Interaktion zwischen den Beteiligten) vorgebracht. Hiermit wird auf die offensichtliche Dringlichkeit einer systematischen und gründlichen Prüfung der Ursachen und Folgen von Unsicherheit in dieser besonderen Domäne reagiert.

Paper A konzeptualisiert die Unsicherheit beim Treffen von Vereinbarungen für geteilte Ressourcennutzung auf der Grundlage der Informationsasymmetrietheorie, und erweitert diese von Anbietern und Ressourcen auf die Zusammenarbeit. Wir konstruieren und validieren ein

theoretisches Modell, das das Antezedens, die Natur und die Folgen von Unsicherheit beinhaltet. Aufbauend auf der Tatsache, dass Ambiguität durch Information verringert werden kann, untersucht Paper B die Effektivität und den monetären Wert der Informationshinweise, die üblicherweise von Sharing-Plattformen verwendet werden, anhand eines Discrete Choice Experiments. In Anerkennung der potenziell negativen Auswirkungen von solchen Informationshinweisen in Form von negativen Bewertungen haben Peer-to-Peer-Sharing-Plattformen bereitwillig die „Antwortoption" angenommen und den Anbietern die Möglichkeit gegeben, den Gegenstand der Kritik zu hinterfragen, abzustreiten oder sich zumindest dafür zu entschuldigen. Auf der Grundlage der Kommunikationstheorie untersucht Paper C die Auswirkungen verschiedener Reaktionsstrategien, sowie die Auswirkungen von negativen Bewertungen auf der Unterkunfts-Sharing-Plattform auf die Glaub- und Vertrauenswürdigkeit des Anbieters. Paper D, als praxisorientierter Artikel, erweitert diese Forschungslinie und hebt die Auswirkungen von negativen Bewertungen auf das Image des Gastgebers und dessen Bereitschaft, ein Zimmer zu vermieten, hervor. Schließlich untersucht Paper E aus Sicht des Anbieters die Auswirkungen verschiedener Selbstdarstellungsstrategien eines Bewerbers auf die Entscheidung des Gastgebers, die Anfrage eines Fremden auf einer Peer-to-Peer-Sharing-Plattform anzunehmen.

Zweitens werden in dieser Arbeit die Implikationen der IKT-gestützten Vernetzung im zwischenmenschlichen Kommunikationskontext diskutiert. Der allgegenwärtige Einsatz von IKT (insbesondere Smartphones) verändert die Art und Weise, wie wir Beziehungen pflegen und aufbauen, uns gegenseitig offenbaren und Informationen austauschen. Die Bindung der Nutzer an ihre Smartphones, welche häufig zur Nutzung sozialen Medien dienen, zeigte nachteilige intra- und interpersonelle Folgen, einschließlich negativer Emotionen wie Neid, Wut, Depression und Konflikte zwischen Gesprächspartnern. Zu diesem Zweck hinterfragen zwei Aufsätze der Dissertation die häufig propagierte Euphorie in Bezug auf die permanente „Verbundenheit". Konkret wurden das als „Phubbing" bezeichnete Phänomen der Brüskierung eines Gesprächspartners durch Nutzung des Smartphones in seiner Gegenwart, die Motivationen hinter diesem Verhalten und die Auswirkungen auf die Kommunikationsergebnisse in Bildungs- und Beziehungskontexten untersucht. Paper F konzentriert sich auf das akademische Umfeld und zeigt, wie Unterbrechungen durch IKT zwei wichtige Lernmodalitäten untergraben - visuelle und auditive Aufmerksamkeit. Paper G untersucht die übermäßige Nutzung von Smartphones in einem romantischen Kontext. Wir konstruieren und validieren ein konzeptionelles Modell, das das Ignorieren eines Partners

aufgrund des Smartphones als Prädiktor für negative Beziehungsergebnisse postuliert, indem es Gefühle der Eifersucht auslöst.

Implikationen für zukünftige Forschungen und Praktiker werden für jeden Artikel ausführlich diskutiert und im letzten Kapitel zusammengefasst.

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List of Abbreviations

AGFI	Adjusted Goodness-of-Fit index
AMOS	Analysis of moment structures
AVE	Average Variance Extracted
CA	Cronbach's Alpha
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
DCE	Discrete Choice Experiment
EFA	Exploratory Factor Analysis
GFI	Goodness of Fit Index
GoF	Goodness of Fit
ICT	Information and Communications Technologies
IFI	Incremental Fit Index
IS	Information System(s)
MSP	Multi-Sided Platform
PLS	Partial Least Squares
RMSEA	Root mean-square error of approximation
SEM	Structural Equation Modeling
TLI	Tucker Lewis Index
VAF	Variance Accounted For
VHB	Verband der Hochschullehrer für Betriebswirtschaft e.V.

1 Introduction

1.1 Motivation

Leveraging Information and Communications Technologies (ICTs) to connect people online has changed the nature of business transactions and communication. Traditional market squares have been replaced by online platforms where providers and consumers, previously scattered and severed by the geographical and temporal barriers, enjoy trading anytime and anywhere in a single space. Traditional media like television and radio that demonstrate content to the audience have been outperformed by new structures like social media platforms which enable anyone to create, consume, and provide direct feedback on the content. As such, the advent of the Internet and other modern ICTs has culminated in a "global village," where people can interact with others across the globe as if they were living next door.

Broadly, the term Information and Communications Technologies (ICTs) refers to technologies that provide access to information through telecommunications. This comprises the Internet, wireless networks, mobile phones, and other communication mediums. Alternatively, ICT can be defined as "the technological devices individuals use, such as desktop or tablet computers, smartphones, and webcams as well as the software and applications used on these devices" (Rudi et al. 2015, p.78).

ICT-enabled connectedness engendered a platform model (or multi-sidedness) in a variety of exchanges, which gave an impetus to a series of economic and communication transformations (Rysman 2009). Initially, one-sided markets (also labeled as pipes) were the dominant model of business, with firms creating or adding value to something, putting it on the market and selling it to customers. In contrast to this linear flow, multi-sided platforms (MSPs) create value primarily by enabling direct interactions between two or more participant groups (Staykova and Damsgaard 2015), thus empowering users to both produce and consume. A comparison of one- vs. multi-sided can be illustrated with the following examples. Television channels rely on a one-sided (pipe) model, but YouTube and Dailymotion are multi-sided marketplaces. Brockhaus Encyclopaedia was established according to a pipe model, but Wikipedia is built on a platform model. Zalando follows pipe logic, but eBay operates as a platform. Flixbus offers

intercity transportation service based on a one-sided principle, while BlaBlaCar built value as a multi-sided marketplace.

This massive shift towards multi-sidedness as the preferred mode to operate generates a multitude of economic insights and has essential implications for society. On the one hand, it can improve social welfare with lower prices (Bapna et al. 2008), contribute more excellent product selection, and higher efficiency than traditional one-sided markets (Ghose et al. 2006). On the other hand, connecting agents in a network implies higher interdependencies between parties which should be incorporated in the strategic decision-making and policymaking. This thesis focuses on two main areas that were affected by the described transformation – business and communication - and is guided by the following overarching research question: *How does ICT-enabled connectedness alter economic exchanges and communication?*

First, this thesis discusses the sharing economy as a new economic paradigm that disrupted the traditional ownership model of business transactions by leveraging peer-to-peer technological platforms to facilitate the exchange of resources among individuals. The most remarkable changes have been witnessed in the accommodation and travel industries. Selling accommodation or trips, traditional hospitality or transport businesses usually invest in assets like rooms or vehicles. Sharing economy companies (e.g., Airbnb or Blablacar) do not own any rooms or vehicles. Instead, employing multi-sidedness (or platform model), they offer an ecosystem to match travelers with hosts and drivers, thus shifting value from owning resources to managing a marketplace. While many practitioners have presaged the sharing economy to open significant opportunities for a more sustainable society, some experts questioned the uncertain and potentially devastating future caused by such peer-to-peer exchanges. Multiple cases of canceled deals, money scams, unsatisfactory hygiene conditions, unpleasant interaction, and even harassment paint a dismal picture of sharing platforms and draw attention to the amplified *information asymmetries*. Our review of extant literature indicates that prior research has explored uncertainty as a major source of information asymmetry mainly in e-commerce (e.g., eBay). Focussing on the unique contextual characteristics of sharing transactions (e.g., absence of ownership transfer, service orientation and intense interaction among parties), this thesis responds to an apparent urgency for systematic and thorough scrutiny of the sources and consequences of information asymmetry in this particular domain.

Conceptualizing uncertainty on sharing platforms is imperative for introducing IT-enabled solutions that could be effective in mitigating every kind of uncertainty (Chaiken 1980). Indeed, popular sharing platforms have been offering a growing number of information-based cues that

help to reduce consumer uncertainty and facilitate more rational choices. Although uncertainty-mitigating mechanisms represent a critical backbone of success for the majority of sharing platforms, little is known about their effectiveness in sharing arrangements (Zervas et al. 2015). Therefore, to bridge the knowledge gaps mentioned above, seven papers within this thesis aim to investigate uncertainty in sharing transactions and the role of distinct information-based cues in shaping consumption decisions.

Second, this thesis discusses the digital technologies and their effects in the interpersonal communication context. ICTs enabled new structures like social media platforms, which, unlike traditional media, count on individual participants for content creation and their success is rooted in active user involvement. Today people carry ICTs almost everywhere they go, and it has become acceptable to use them all the time —whether sitting on a train, socializing at a café, in a company meeting or classroom. As people are going about everyday life in the real world, they are simultaneously engaging in one or many virtual worlds, too. The pervasive use of ICTs (especially smartphones) makes a difference in the ways we maintain and develop relationships, disclose things to each other, and exchange information.

The promoters of ICT-mediated communication believe it creates social capital, uncovers new forms of "being together," facilitating connectedness, social support, and collective action. An opportunity to connect through virtual sources promises to maintain a similar level of communication richness as face-to-face settings. At the same time, critics express an increased number of *apprehensions* associated with being *permanently online* and *connected.* First, the amount and depth of information actively disclosed by users or collected by a third-party are responsible for increased privacy concerns. Second, the users' attachment to their smartphones, which often serve to engage with social media, evidenced detrimental intra- and interpersonal consequences. On the individual level, it has been linked to negative emotions like envy, anger, depression. Interpersonally, absorption with the smartphone allows people to disconnect themselves from reality and become deeply involved in a virtual world unavailable to those around them. While they are physically present, this mental absence was found to cause conflict situations and stress among conversational partners.

To this end, two papers of the thesis challenge the frequently promoted euphoria regarding the permanent "connectedness." Specifically, the phenomenon of snubbing the conversational partner when using the smartphone in his or her company, coined as "phubbing," motivations behind this behavior and the effect on communicational outcomes in education and relationship contexts have been investigated. Thus, the work contributes to extensive IS research that

addresses dark sides of information technology use and provides corresponding implications for practitioners.

1.2 Structure of the Thesis

This thesis is subdivided into ten chapters. The motivation is given in the introductory chapter. Chapter 2 then provides the theoretical foundations and establishes a common understanding of the research context. Chapters 3 to 9 consist of the seven articles that constitute the core of this cumulative dissertation. The final chapter summarizes and recaps the main theoretical and practical contributions.

Summaries, contributions and the articles are written from the first-person plural point of view (i.e., we) to express that the majority of studies were conducted with co-authors and therefore also reflect their opinions. The seven articles included in this dissertation and their respective publication outlets are listed below.

Papers related to the implications of the ICT-enabled connectedness in the sharing economy context:

Paper A: Abramova, O., Krasnova, H., Tan, C.-W., Buxmann, P. "Reducing Uncertainty in the Sharing Economy: the Role of Information Cues"[1]

Paper B: Abramova, O., Krasnova, H., Tan, C.-W. (2017) "How Much Will You Pay? Understanding the Value of Information Cues in the Sharing Economy". In: 25th European Conference on Information Systems, Guimarães, Portugal.

Paper C: Abramova, O., Shavanova, T., Fuhrer, A., Krasnova, H., Buxmann, P., (2015) "Understanding the Sharing Economy: The Role of Response to Negative Reviews in the Peer-to-peer Accommodation Sharing Network." In: 23rd European Conference on Information Systems, Münster, Germany.

Paper D: Abramova, O., Krasnova, H., Shavanova, T., Fuhrer, A., Buxmann, P. (2016) "Impression Management in the Sharing Economy: Understanding the Effect of Response Strategy to Negative Reviews." In: Die Unternehmung, DU, Jahrgang 70 (2016), pp. 58 – 73

[1] Please note: At the time of the thesis defense, this paper was submitted to a VHB-ranked IS journal

Paper E: Abramova, O. (2020) " Does a Smile Open All Doors? Understanding the Impact of Appearance Disclosure on Accommodation Sharing Platforms." In: 53rd Hawaii International Conference on System Sciences, Hawaii, USA, accepted for publication[2].

Papers related to the implications of the ICT-enabled connectedness in the communication context:

Paper F: Abramova, O., Baumann, A., Krasnova, H., Lessmann, S. (2017) "To Phub or not to Phub: Understanding Off-Task Smartphone Usage and Its Consequences in the Academic Environment." In: 25th European Conference on Information Systems, Guimarães, Portugal.

Paper G: Krasnova H., Abramova O., Notter I., Baumann A. (2016) "Why Phubbing is toxic for your Relationship: Understanding the Role of Smartphone Jealousy among 'Generation Y' users." In: 24th European Conference on Information Systems, Istanbul, Turkey.

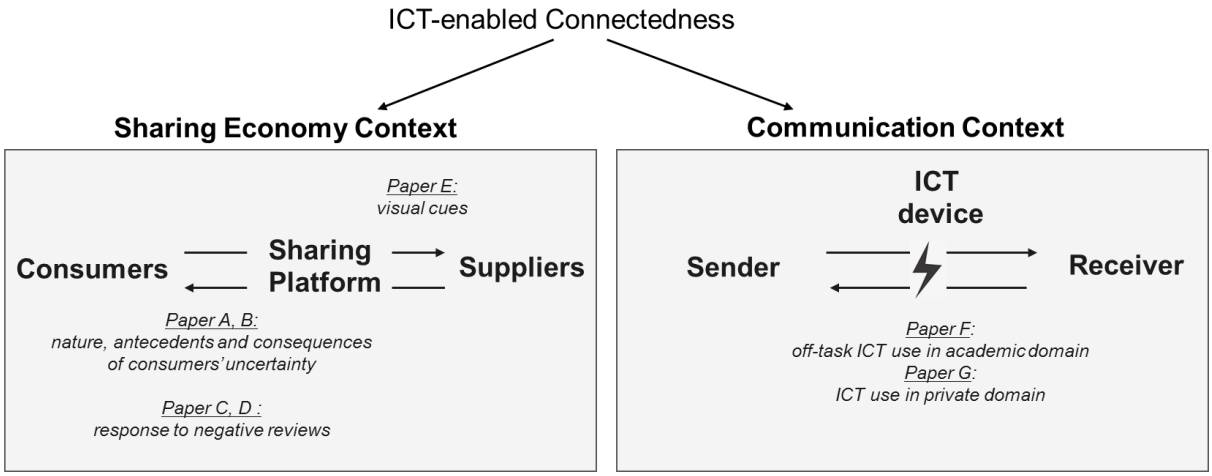

Figure 1. Thesis Overview

The remainder of this chapter provides an overview of each paper's content and emphasizes how they relate to the disruption of traditional business and communication models.

Paper A establishes the importance and unique characteristics of uncertainty in the sharing economy setting. Extending the evidence from the e-commerce context, the article conceptualizes uncertainty in sharing transactions. Building on information asymmetry theory, we theorize that consumers who engage in sharing transactions are exposed to resource, supplier and collaboration uncertainty. We construct a theoretical model that includes the antecedents, nature, and consequences of uncertainty. Further, we validate our research model

[2] Please note: At the time of the thesis submission, this paper was accepted for publication in the conference proceedings

with qualitative data obtained from focus groups and quantitative data, applying the experimental design. The results are based upon the responses of 299 participants. The study contributes to the extant literature by providing a better understanding of consumer decision-making in sharing arrangements. Specifically, we demonstrate that uncertainty related to supplier and collaboration represents a critical barrier to consumer engagement, while resource uncertainty evidenced marginal effects. At the same time, supplier and resource uncertainty are found to be determinant of price premiums. Finally, information cues are shown to be able to mitigate the corresponding uncertainty type successfully.

Building on the fact that ambiguity can be reduced with information, sharing platforms offer a variety of in-built cues that may reduce information asymmetry, signal trust and assist potential customers in their decision making. Paper B investigates the effectiveness and monetary value of the cues commonly used by sharing platforms via a discrete choice experiment methodology. We demonstrate that even though consumers show a trade-off between trustworthiness and price, most information cues accomplish their engagement-inducing function. Specifically, while a feedback system and offline verifications have been shown to contribute to consumers' willingness to book an offer in an accommodation sharing setting, signals grounded in social graphs surprisingly exhibit only marginal significance.

As suggested by the study above, a feedback system in the form of online reviews appears to be instrumental in shaping consumers' decisions. Acknowledging the potentially adverse effect of negative reviews as well as the subjective nature of travel experience evaluations, peer-to-peer sharing platforms have readily embraced the "response" option, empowering providers with the opportunity to challenge, deny or at least apologize for the subject of critique. Leaning on communication theory, Paper C therefore explores the impact of different response strategies and review negativity on trusting beliefs towards the provider in peer-to-peer accommodation sharing settings. Our findings suggest that when the subject of criticism is controllable by a provider, apologizing for and denying an issue increase the trusting beliefs of the potential consumers. Once the subject of the complaint is beyond the control of the host, denial of the problem does not contribute to guests' trust in the host, whereas confession and excuse are then positively linked to trusting beliefs.

Extending this line of research, Paper D as a practice-oriented article highlights the implications of negative reviews on the host's image and willingness to rent a room. As such, we infer that only the "confession/apology" strategy can enhance the guest's impression of the host and boosts willingness to rent when the subject of the complaint is manageable by a host. However,

when the host cannot affect the reason for criticism, both “confession/apology” and “excuse” have a positive influence on the impression and also the guests’ willingness to rent. Surprisingly, the “denial” strategy appears ineffective in both the controllable and uncontrollable contexts that we tested.

While preceding works investigated the decision-making from a consumer perspective, Paper E takes the supplier’s perspective to uncover what impact different presentation strategies have on the host’s decision to accept a request sent from a stranger on a peer-to-peer sharing platform. Findings from our experimental study indicate that in the accommodation-sharing context, such visual cues as a photographic self-disclosure of a guest significantly influence their chances to be accepted or rejected by the host. Contrary to a photo with a smiling face, which is positively associated with the probability of being hosted, an image of a face covered with sunglasses, zoomed-in or too dark, ceteris paribus, reduces the applicant’s chances to be accepted. Furthermore, we demonstrate that social attractiveness judgments mediate the link between a guest’s self-disclosure and the host's willingness to cooperate.

Responding to calls for research to explore the implications of excessive ICT use across a variety of communication contexts, Paper F and Paper G examine the phenomenon of phubbing, its consequences, and underlying mechanisms. Paper F focuses on the academic environment and employs a multi-method approach, combining observations, questionnaires, quasi-experimental research design, and focus group interviews. It is shown that students spent a substantial amount of lecture time on their smartphone for non-study related purposes and often underestimated the effect this behavior has on the education process. Applying a quasi-experimental design, we demonstrate that interruptions trough ICT undermine two key learning modalities (Barbe et al., 1981; Fleming, 1995). As such, the amount of distraction (the number of times a student looks at a smartphone during the lecture) impairs the visual attention, while the depth of distraction (the total duration of smartphone use) leads to decreased auditory attention. The follow-up analysis of the focus group interviews elaborates on the reasons behind the off-task smartphone activities und suggests preventive measures.

Paper G investigates the excessive use of smartphones in a romantic context. A content analysis of 252 open answers confirms and compliments prior evidence that partner’s phubbing leads to the loss of exclusive attention towards another party, anger, sadness and other negative jealousy-related feelings. Based on our qualitative and theoretical findings, we construct and validate a conceptual model that posits ignoring a partner in favour of the smartphone as a predictor of adverse relationship outcomes through triggering feelings of jealousy. We find that

the partner's phubbing evokes jealousy, which is inversely related to the couple's relational cohesion. Moreover, jealousy plays a mediating role in the relationship between partner's smartphone use and relational cohesion, acting as a mechanism behind this undesirable link. Together Paper E and Paper G challenge the frequently promoted euphoria about permanent "connectedness" and contribute to the IS research that addresses dark sides of information technology use, providing corresponding implications for IS practitioners.

In addition to the papers included in the thesis, the following articles (Table 1) were published during my time as a Ph.D. candidate. They are, however, not part of this dissertation:

Authors	Title	Outlet	VHB Rating	Published
Baum K., Meißner S., Abramova O., Krasnova H.	Why are we complaining about online campaigning? Exploring concerns about targeted political online advertising	27th European Conference on Information Systems (ECIS)	B	2019
Weissenfeld, K., Abramova, O., Krasnova, H.	Antecedents for Cyberloafing - a Literature Review.	Internationale Tagung Wirtschaftsinformatik (WI)	C	2019
Wagner, A., Krasnova,H., Abramova, O., Buxmann, P., Benbasat, I.	From Privacy Calculus to Social Calculus: Understanding Self-Disclosure on Social Networking Sites.	39th International Conference on Information Systems (ICIS)	A	2018
Wagner, A., Abramova, O., Krasnova, H., Buxmann, P.	When You Share, You Should Care: Examining the Role of Perspective-Taking on Social Networking Sites	26th European Conference on Information Systems (ECIS)	B	2018
Abramova, O., Wagner,A., Krasnova, H., Buxmann, P.	Understanding Self-Disclosure on Social Networking Sites - A Literature Review	22nd Americas Conference on Information Systems (AMCIS)	D	2017
Weissenfeld, K., Abramova, O., Krasnova, H.	Understanding Storytelling in the Context of Information Systems	22nd Americas Conference on Information Systems (AMCIS)	D	2017
Abramova, O., Veltri, N., Krasnova, H., Kiatprasert,S., Buxmann, P.	Physician-Rating Platforms: How Does Your Doctor Feel?	21st Americas Conference on Information Systems (AMCIS)	D	2016
Abramova, O., Baumann, A., Krasnova,H., Buxmann, P.	Gender Differences in Online Dating: What Do We Know So Far? A Systematic Literature Review	49th Hawaii International Conference on System Sciences	C	2016

Table 1. Additional Articles

2 Theoretical Background

This chapter presents the research context of the dissertation and elucidates the fundamental concepts. The first subsection 2.1 provides a background on the implications of ICT-enabled connectedness in the sharing economy. The second subsection 2.2 focuses on the corresponding consequences in the communication domain.

2.1 ICT-enabled Connectedness in the Sharing Economy Context

2.1.1 Sharing Economy Definitions and Distinctions

The advent of the sharing economy has revolutionized consumption habits across a wide range of goods and services, and turned whole industries upside down. The term “sharing economy” was introduced in 2008 by Professor Lawrence Lessig at Harvard Law School and gained popularity in 2010 after the book “What's Mine is Yours” (Botsman and Rogers 2010) was released, in which all the trends from sharing, bartering, lending to swapping which have been refreshed and reinvented were analyzed. Using the terms “collaborative consumption,” “collaborative economy” and “sharing economy”interchangeably, the work revolves around developing “an economic system that unlocks the value of underused assets through platforms that match “haves” with “wants” in ways that enable greater efficiency and access” (Botsman and Rogers 2010).

Despite the ubiquity of the phenomenon, the term “sharing economy” is often perceived as ambiguous and confusing in both business and academia. One possible reason is rooted in the populism and common misconception of sharing economy as an ultimate novelty. Driven by the desire to be perceived as trendy, technologically advanced and innovative, prospective participants are certainly stretching the term beyond reasonable usage.

Humans have shared since ancient times; it reinforces social relations and solidifies cultural practices (Belk 2009). Sharing was essential to survival in all times, including pre-modern societies (Stack 1974). In that sense, sharing is not new and was historically practiced by people in need who lacked resources.

However, what is novel about the modern sharing economy is the so-called “stranger sharing” (Schor 2014). Historically, people tried to share within their known communities, not outside. The examples include sharing with family members, friends and neighbors. Nowadays sharing platforms facilitate sharing among unfamiliar individuals, who as a rule have no common

ground, friends or other connections. These transactions imply a higher degree of uncertainty while remaining quite intimate by nature (e.g., sharing one's home or car). The digital platforms make a stranger less risky and more socially attractive because they provide information about their users, thus allowing them to "get acquainted" and gauge the intentions and benevolence of potential collaborators.

In this doctoral thesis, we follow Frenken and Schor (2017) and define sharing economy as two-sided markets that are based on sharing underutilized assets ("idle capacity") on a peer-to-peer (P2P) basis and over an online platform, possibly for money. Typical goods that are frequently being shared are cars and homes.

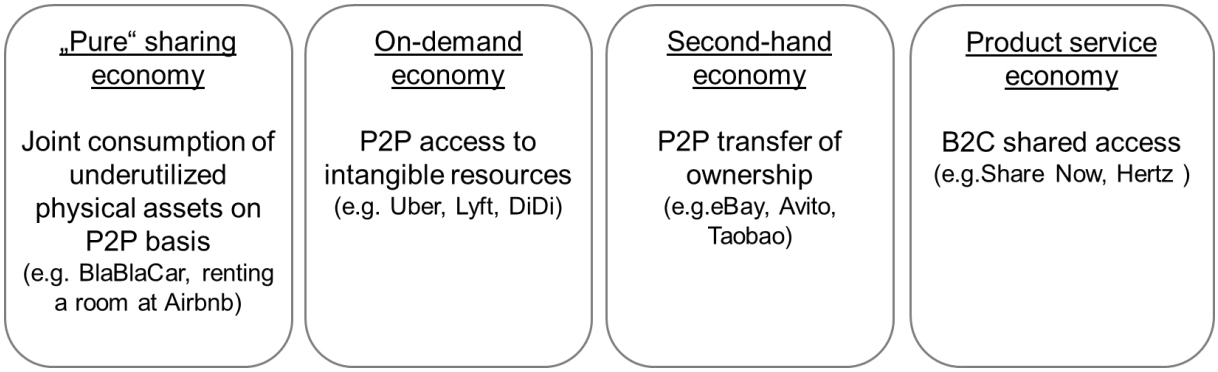

Figure 2. Typology of sharing economy and other related forms of platform economy (based on Frenken et al., 2015)

The sharing of underutilized assets is central to the definition of sharing economy since it differentiates "pure" sharing from on-demand services (Figure 2). Consider a fundamental difference between ordering a taxi through Uber, Lyft or Didi and sharing a ride on BlaBlaCar or via another hitchhiking or carpooling platform (Meelen and Frenken 2015). In case of a peer-to-peer taxi service, a consumer creates a new capacity by ordering a taxi on-demand to drive a passenger from A to B. Without the order the distance would not have been made, which justifies coining such activities as on-demand economy. In case of carpooling or ridesharing, however, a consumer occupies a seat that would otherwise stay free, but the driver would have traveled from A to B anyway. Therefore, hitchhiking and carpooling make use of idle capacity and are examples of sharing economy (Benkler 2004). The same principle is applied to the accommodation sharing context. When there is a spare bedroom or sleeping place in a house, the asset is not utilized and hence idle capacity. However, if a person buys an apartment to rent it out for tourists, they are practicing commercial lodging similar to a hotel. An on-demand economy (or "gig economy") includes purchasing personalized services like a ride, a handyman

or a cooked meal for which assets and skills are employed specifically and would not have been used without an order.

According to the typology presented in Figure 2, peers selling goods to each other is defined as the second-hand economy (e.g., eBay, Avito and Taobao). Unlike sharing economy, these are purchasing transactions that involve the transfer of ownership.

Finally, renting goods from companies rather than from peers can be called the product-service economy. Examples include rental services by Hertz or Share Now which were known as DriveNow by BMW and car2go by Daimler AG before they merged in 2019.

To sum up, the proposed definition of the sharing economy platforms and other types of platform activities, which should be differentiated from it, stems from the notion of sharing as a historical practice. Before the arrival of Internet platforms, individuals shared with trusted social contacts (family and friends) on a small-scale. The Internet has decreased transactional costs between strangers, thus making it possible to share with strangers and on a large-scale. Transactional costs can be generally understood as all the costs and trouble incurred in making an economic transaction (Williamson 1981). Mainly costs related to search and arranging a contract represented a critical barrier for interactions with unknown people since little information was available about a counterparty. With Internet platforms, the search and contact costs have become much lower. Nowadays, consumers enjoy an opportunity to place goods and services online, anywhere and anytime. On the majority of platforms, information about a person and their past transactions is available and serves as cues to mitigate risks. Moreover, online payment systems substantially assist transactions, which further lowers transaction costs.

This thesis aims to support research on the definitional issues of sharing economy by putting forward one particular conceptualization of peer-to-peer multi-sided platforms based on the nature of exchanges (Paper A). Recognizing commonalities with other related types of platforms, we advocate the singularity of the sharing context and offer new insights into its implications.

2.1.2 Assessing Sharing Economy Platforms

The overall effects of the sharing economy are a matter of debate in the media and the research world. Following the cost-benefit logic, we review past research that has been steadily weighing in with a more in-depth analysis of the sector’s implications.

First, the initial enthusiasm about sharing is driven by economic benefits: The platforms that facilitate the use of idle capacity contribute to increased efficiency. By making people less dependent on ownership, the number of products produced is assumed to decrease. While consumers enjoy lower prices and get access to previously unavailable goods, suppliers can earn additional income by employing the same amount of assets. 47% of the hosts could afford to stay in their homes thanks to their Airbnb earnings. On a macro-level, the sharing economy enhances its participants' welfare by creating new transactions. For example, Airbnb guests stay longer than typical "hotel" tourists (5 nights vs. 2.8 nights respectively), and also spend 46.1% more during their visits, thus producing a noticeable economic impact in cities across the world.

Another advantage of sharing platforms are environmental benefits, which are especially pronounced for carpooling. Since cars stand idle 95% of the time, any sharing scheme that made cars accessible to non-owners would reduce the number of vehicles required for a given mileage level. In 2018, BlaBlaCar carpoolers were estimated to have saved 1.6 million tonnes of CO_2 due to the relative efficiency of filled cars versus individual traveling (BlaBlaCar 2018).

Moreover, participants report on social benefits entailed by the sharing economy. Since the advent of Internet platforms makes sharing with strangers feasible, individuals extend the practice to a larger scale. The matching process, followed by face-to-face meetings, typically leads to new social ties. To the extent that sharing peers also create meaningful contacts, sharing practices increase social mixing. The sharing economy provides peer service providers the opportunity to get to know new people and eventually form meaningful friendship ties. Among other benefits elaborated by past studies are entrepreneurship freedom and flexibility for providers who are perceived as independent contractors (Benoit et al. 2017; Sundararajan 2014, 2016).

While the advantages paint a promising picture of the new era in economic exchanges focused on efficiency and sustainability, there has also been a growing number of concerns about this latest trend. Although one cannot deny certain positive outcomes, the full economic effects are far more complex. First, the growth of sharing platforms has a considerable impact on other markets. Traditional businesses and their workers are often likely to be worse off in direct competition with sharing economy competitors. In the hospitality industry, the reduction of hotel sales by 8-10% was reported in the US districts where accommodation sharing platforms like Airbnb gained a significant market share, with cheap hotels and hotels not disposed to business travelers being the most vulnerable (Zervas et al. 2016). In South Korea, the inspection

estimated a loss of approximately 0.16% in the hotel industry's room sales for every 10% increase in the Airbnb supply (Lee and Kim 2018).

Likewise, the increasing popularity of ridesharing platforms forced the state-owned railway enterprises like SNCF in France or Deutsche Bahn in Germany to acknowledge the increased competition (Schlesiger 2015). Further potential effects are observed on the supply and real estate pricing: If home sharing remains popular, residents might experience an increase in rent in the respective areas (Zervas et al. 2017).

Second, experts warn about negative externalities in which a third party, which is not directly involved in a transaction, may suffer. The issue is particularly relevant in the accommodation sharing context since neighbors may experience inconvenience and insecurity because of strangers. Responding to the multiple complaints from neighbors of Airbnb hosts, the platform has introduced a corresponding section on their website, enabling the disadvantaged party with the opportunity to challenge inappropriate behavior, submit an issue and get support (airbnb.com 2019). Moreover, in famous touristic destinations like Berlin, San-Francisco, New York, Barcelona, Madrid and Reykjavik municipal government has reacted with firmer regulations towards home-sharing platforms and lodging providers (Williams 2016).

Besides, recent studies evidenced discrimination taking place via sharing platforms. Full of salient pictures and social profiles that aim to initiate trust, peer-to-peer online marketplaces make it easy to discriminate — as exhibited by the disadvantages faced by a black host trying to offer a place to stay on Airbnb in terms of the prices charged (Edelman and Luca 2014). This highlights how sharing economy platforms create opportunities for individual users to favor or reject potential co-sharers (e.g., hosts and guests on Airbnb) based on inherent features (Edelman et al. 2017; Ahuja and Lyons 2019).

A body of literature has also raised concerns on the regulatory challenges of the sharing economy, pointing out the licensing regimes, insurance and taxation issues (Frenken and Schor 2017; McKee 2017; Schor 2017; Sundararajan 2016; Wu and Zhi 2016). In case of the absence of traditional permanent employment, sharing economy gains may encompass a substantial proportion of income for some providers who are registered as independent contractors. A major consequence of this structural change is that suppliers on sharing platforms are exposed to higher risk and lower job security, as compared to the employer-employee relationship. So far, online marketplaces do not offer an alternative to trade unions to protect workers' rights and well-being (De Stefano 2016).

Benefits	Concerns
Economic gain (Böcker and Meelen 2017; Fraiberger and Sundararajan 2015; Sundararajan 2016; Tussyadiah 2015)	Overexaggeration of environmental, social and economic benefits (Codagnone et al. 2016; Frenken and Schor 2017; Hamari et al. 2016; Pasquale 2016; Schor and Fitzmaurice 2015)
Social benefits (Frenken and Schor 2017; Schor and Fitzmaurice 2015; Tussyadiah 2015)	Legal and regulation problems (McKee, 2017; Ring and Oei, 2016; Rogers, 2016)
Environmental benefits (Frenken 2017; Frenken and Schor 2017; Martin and Shaheen, 2011)	Privacy issues (Frenken, 2017; McKee 2017)
Freedom of entrepreneurship (Benoit et al. 2017; Sundararajan 2014, 2016)	Discrimination issues (Edelman et al., 2017; McKee, 2017)
Temporary access to assets (Bardhi and Eckhardt 2012; Fraiberger and Sundararajan 2015)	Risks of labor exploitation and unfair competition (Frenken 2017; McKee 2017; Schor, 2017)
Enjoyment (Hamari et al. 2016)	Increase in rental/real estate prices (Zervas et al. 2017)
Flexibility (Bardhi and Eckhardt 2012; Owyang et al. 2013)	Increase in income distribution inequality (Frenken and Schor 2017; Schor 2017)

Table 2. Summary of benefits of and concerns about the sharing economy

To sum up, the overall effects of the sharing platforms are hard to assess. Despite the indisputably positive direct economic benefits accompanied by strong evidence on environmental and social advantages, critics call for a more careful examination of the changes set in motion as a result of new sharing practices. Hence, past research also proffers the skewed distributional effects and regulatory gaps, with participants subjected to higher uncertainty and various transaction spillovers.

The papers included in this thesis contribute to the assessment of the sharing economy. Specifically, Paper A narrates about users' concerns while Paper C and Paper D improve understanding of the social component of sharing platforms.

2.1.3 Uncertainty in Online Markets

Online marketplaces are widely touted for their matching features, i.e., allocating the "right" goods to the "right" people at the "right" place (Dimoka et al. 2012). However, they are still prone to information asymmetry, i.e., a situation where one party possesses more information than its counterpart. Indeed, in a simple purchase transaction, sellers are more knowledgeable about the quality of their listed items than buyers. Moreover, the online environment carries an impediment in gauging the actual properties of the offers. The physical detachment on e-platforms hinders consumers from testing the product's characteristics by touching, smelling or tasting as well as from observing social cues like body language and interaction style (Gefen et al. 2003). This issue is especially critical for experience products that cannot be easily evaluated prior to the purchase (Nelson 1970). Mainly stemming from the information

asymmetry and partly due to the complex nature of certain products, uncertainty still makes many potentials consumers reluctant to engage in online exchange relationships with sellers (Pavlou et al. 2007), especially for such high-involvement deals as sharing activities.

Referring to a "principle-agent" perspective (Bergen et al. 1992, Mishra et al. 1998), information asymmetries in the e-commerce context have been predominantly considered as a function of two key components: hidden information and hidden action (Pavlou et al. 2007). Hidden information means the problem of pre-contractual information misrepresentation performed by a seller (i.e., adverse seller selection). Hidden action assumes post-contractual opportunistic behavior on the seller's side (i.e., seller moral hazard) (Akerlof 1970, Rothschild and Stiglitz 1976). As such, as an under-informed party, online consumers suffer from *seller uncertainty* (Ba and Pavlou 2002).

Broadening this view, further research (Chatterjee and Datta 2008; Dimoka et al. 2012; Luo et al. 2012) considers that not all actions of the seller are deliberate. First, sellers may be unable to fully describe and evaluate the attributes of a product, which may cause adverse product selection. Second, since suppliers may be unaware of the product's hidden defects due to limited expertise, it may create difficulties in predicting its future performance (i.e., product hazard). Altogether, this can lead to *product uncertainty* for buyers (Dimoka et al. 2012). This thesis extends the two-component model of uncertainty, acknowledged in e-commerce, and argues that the peculiarities of sharing arrangements give rise to a novel type of uncertainty (Paper A).

So far, there is an open debate about the relationship between different uncertainty types and their facets. Prior studies report contradictory results which include substitution effects between product-based and seller-level uncertainty (Anand and Shachar 2004), support for neither substitution nor complementarity relationships (Ghose 2009) as well as inferences about the amplifying effect of seller uncertainty (Dimoka and Pavlou 2008; Dimoka et al. 2012). Paper A of this doctoral thesis submits additional evidence on the relation between different uncertainty facets.

Uncertainty as an information problem may be resolved with the help of relevant cues or signals (Spence 1973). Prior research has exhibited the ability to signal the quality of an offer via a platform, for example through feedback mechanisms, disclosure of a seller's experience, third-party assurances and detailed product descriptions (e.g., Benlian and Hess 2011, Tang and Lin 2016). The efficiency of these cues remains to be seen. Addressing this issue, the current dissertation includes three papers (i.e., Paper A, Paper B and Paper E) that aim to shed light on

the effect of information cues on the critical outcomes of sharing platforms, namely willingness to transact and price premiums.

2.2 ICT-mediated Connectedness in the Communication Context

The recent decade has been marked by an explosion of ICT use in the everyday life of individuals. Nearly every adult in a developed country has access to the Internet, with the penetration rate of 89.4 % in North America and 86.8 % in Europe for the total population (internetworldstats.com 2019). In the US, some groups have achieved near-saturation levels of adoption of underlying digital technologies, as illustrated in Figure 3 (Pew Research Center 2018). With so many technology devices around an individual, profound changes in communication are likely to occur.

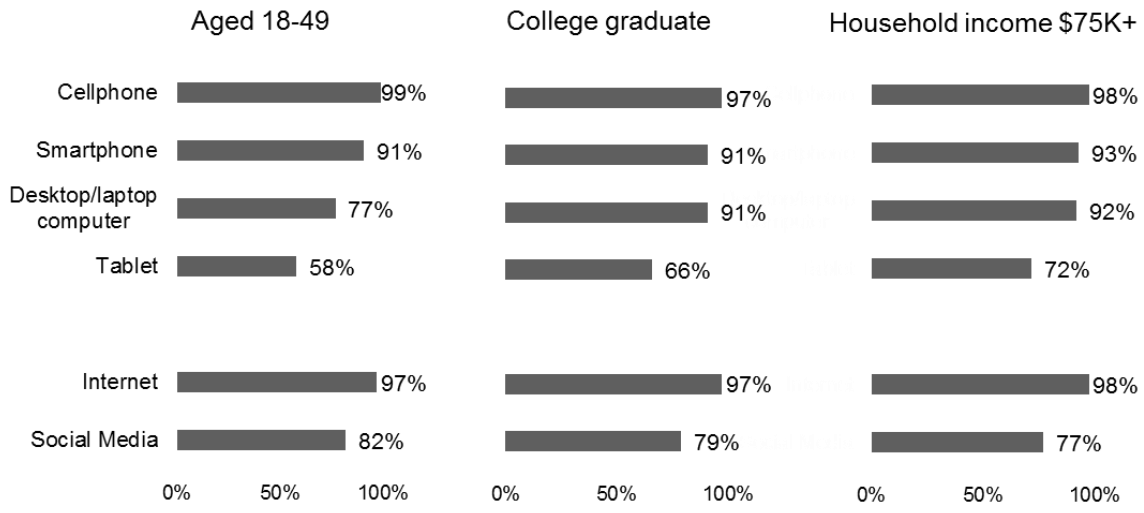

Figure 3. US adults who claim they own or use technology or device

(Source: Pew Research Center, Survey conducted in January 2018)

All modern devices (i.e., smartphones, laptops, tablets and other digital wearables) are portable and share characteristics which make them enticing and intrusive, with past research scrutinizing smartphones as a gratification outperformer. Several factors are discovered to be responsible for high attachment, the most relevant being (Carbonell et al. 2013): 1) smartphones induce in users a feeling of euphoria or feeling valued/loved when they communicate with others; 2) smartphones are highly personalizable, create emotional bonding or even lead to one's phone becoming an extension of the self – projecting a variety of cues on one's gender, social status, attitude and personality; 3) they combine multiple functions and accommodate an alarm clock, watches, calculator, currency converter, music player, radio, camera, navigator, flashlight and more; and 4) smartphones have established themselves as a form of entertainment

during leisure or waiting times by enabling browsing, watching videos and playing games. Being able to satisfy a broad range of needs, mobile ICT devices transform our daily routines, filling spare time and bridging the gaps between life activities (Dimmick et al. 2011; Oulasvirta et al. 2012).

2.2.1 Positive Outcomes of ICT Use

The positive consequences of ICT devices have been revealed across different communication domains. In family life, they enable quickly getting in touch with a person to express caring and to organize the logistics of joint events like dinners and trips (McCormack 2015). The former is demonstrated to be essential in crises, e.g., in case of refugees *(*AbuJarour et al. 2019). Amplified connectedness is also reported in the romantic domain, with technology helping couples to stay in contact during the day (Pettigrew 2009), which is especially valuable when either partner suffers from stress (Dietmar 2005). Moreover, the technology-mediated relationship may enhance communication intensity (Coyne et al. 2011), commitment and satisfaction (Sidelinger et al. 2008). In the work and educational contexts, participants can benefit from ICTs, e.g., taking advantage of global learning (Coursera 2016; Duolingo 2019), virtual manipulative tools (NLVM 2019), interactive simulations and models (Concord Consortium 2016) and thorough evaluation (Kessler 2010).

2.2.2 The Intrusion of ICT

Despite the examples above proffering positive impacts of technology on interpersonal connections, a multitude of investigations advise that certain ICT use may hamper meaningful communication. One possible rationale behind these adverse consequences may be that, fuelled by gratification benefits, ICT use becomes intrusive and people experience difficulties in disconnecting from their devices. Research uncovers that interaction with these devices may be so intensive that users begin to experience problems with offline conversational partners (e.g. friends, family members, peers or colleagues) (Elphinston and Noller 2011; Gentile et al. 2013). Therefore, certain levels of technology use are recognized as problematic or pathological. For instance, recall how often conversation stagnates because either partner has opened a smartphone and got swallowed by a Facebook, Instagram, E-mail, Messenger or game black hole.

Among terms that capture problematic technology use, “technoference” and “phubbing” have become most widespread. Technoference (blend of “technology” and “interference”) means

everyday intrusions or interruptions in interactions between individuals or time spent together that occur due to technology. Phubbing (a blend of phone and snubbing) is defined as the act of ignoring somebody while you are using your mobile phone. Both terms are semantically close, can occur in any type of interpersonal communication and are used interchangeably in academia (e.g. McDaniel et al. 2018) and media. The present thesis follows this convention, although in Paper F and Paper G we mostly use the word "phubbing" for the purpose of consistency.

The intrusions and interruptions of digital devices during social interactions have important implications. In romantic relationships, placing technology above one's partner, even if only for a brief moment, leads to conflict accompanied by satisfaction dwindling (Ahlstrom et al. 2012; Coyne et al. 2012; Schade et al. 2013; Roberts and David 2016). In parent-child relationships, insulating oneself with technology during the interaction with children creates a feeling of disrespect on both sides and is seen as a sign for a lack of education (Roy and Paradis 2015).

Among friends, the same effects hold. More than that, even the simple act of pulling out ICT devices is related to the perception of a conversation as inferior. Distractions on one side make the partner feel annoyed and disrespected, backfiring on the relationship by lowering feelings of closeness, connection, and conversation quality (Przybylski and Weinstein 2013; Misra et al. 2014, Abeele et al. 2016). Interestingly, even when the act of phubbing was simulated, people who put themselves in place of a cartoon hero who was phubbed felt more negatively about the interaction than people who did not picture phubbing (Chotpitayasunondh and Douglas 2018).

Finally, communication in the academic environment is threatened by technology interventions, with short-term education outcomes being most vulnerable. As such, texting during a class negatively correlates with memorizing the lecture material (Ellis et al. 2010; Wood et al. 2012; Froese et al. 2012). Since tasks with greater attentional and cognitive demands are extremely sensitive to any distractions, the mere presence of the smartphone is negatively associated with student performance (Thornton et al. 2014). Studies targeting long-term education outcomes (e.g., overall GPA) deliver mixed results: While texting and Facebook use during homework are inversely related to the college GPA, no correlation was registered for activities like emailing, talking on the phone or using instant messages, according to self-reported data (Junco and Cotton 2012).

Overall, these studies suggest that technology can disrupt present-moment relationships. This doctoral thesis extends this research by examining links between interruptions due to ICT devices use and communication outcomes in romantic, one-to-one (Paper G) and academic, one-to-many domains (Paper F). Both papers establish the presence of the phenomenon, add on the mechanisms behind this link and pave the way for possible instruments to mitigate these adverse effects.

With the basic theoretical background established, the following chapters 3 to 9 consist of the aforementioned articles. Each chapter is concerned with a different aspect of the implications of ICT-enabled connectedness in the sharing economy or communication context.

3 Paper A: Reducing Uncertainty in the Sharing Economy: Role of Information Cues

Title

Reducing Uncertainty in the Sharing Economy: the Role of Information Cues

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Abstract

Transformative developments induced by the new sharing economy open significant opportunities for more sustainable business practices. Nevertheless, to reach those opportunities' full potential, uncertainties surrounding sharing arrangements need to be better understood and alleviated. So far, uncertainty has been thoroughly investigated in the e-commerce context. However, the unique characteristics of the sharing economy, such as the absence of ownership transfer and tighter interaction between parties, are likely to alter the nature of transactions and give rise to novel uncertainties consumers are confronted with. In light of this, we construct and validate a theoretical model of uncertainty in sharing context and examine its effects and antecedents.

By applying the information asymmetry theory to a novel context, we first conceptualize three different types of uncertainties a participant in the sharing economy may be exposed to: supplier, resource and collaboration uncertainty. Second, we demonstrate how the proposed uncertainties can be mitigated with the help of relevant information cues. Third, we assume all uncertainties to affect consumer engagement and price premiums negatively.

The results distinguish between three strains of uncertainty and outline potential cues to tackle each of them. The work further highlights that uncertainty related to suppliers and co-sharers represents a critical barrier to participation. Concurrently, price premiums are affected by

supplier and resource uncertainty. Our study helps to circumvent the dark sides of the sharing economy and yields insights that can be harnessed by practitioners to design sharing platforms which guide consumers in making informed decisions.

Keywords

Sharing Economy, Information Cues, Resource Uncertainty, Supplier Uncertainty, Collaboration Uncertainty, Price Premiums, Willingness to Transact.

3.1 Introduction

The advent of two-sided markets that are "based on sharing underutilized assets on a peer-to-peer (P2P) basis and over an online platform" [3] (Botsman 2013) has revolutionized consumption habits across a wide range of goods and services. Indeed, sharing platforms, which facilitate P2P sharing of resources for the likes of housing (e.g., Airbnb, 9flats), rides (e.g., BlaBlaCar), or parking places (e.g., ParkAtMyHouse), have flourished in recent years. By disintermediating conventional channels of commerce in the exchange of both tangible and intangible resources, these sharing platforms are disrupting traditional value chains. For example, in the hospitality industry, accommodation sharing platforms like Airbnb have claimed a substantial share of the market, with hotel sales decreasing by 8-10% in areas of active Airbnb expansion (Zervas et al. 2015). Similarly, the user base of carpooling platform BlaBlaCar has ballooned from 20 million members in 2015 (Willsher 2015) to 70 million members in 2019 (blablacar.com 2019). This has compelled state-owned railway monopoly holders, like SNCF in France or Deutsche Bahn in Germany, to officially acknowledge the increased competition by ridesharing services (Schlesiger 2015).

The growing popularity of sharing platforms is rooted in the underlying benefits associated with the concept of sharing. First, consumers of the sharing economy can temporarily enjoy the benefits of possession without the daunting responsibility of ownership (de Lecaros-Aquise 2014). Consequently, users can gain access to goods and services from which they were previously excluded, for instance, due to financial constraints (Fraiberger and Sundararajan 2015). Second, owners can capitalize on idle capacities in their possession and generate

[3] Importantly, our definition does not encompass businesses that intentionally own assets with the explicit goal of renting them out (e.g., leasing companies, equipment and vehicle (e.g. Share Now) rental firms). Rather, in this study, we focus on peer-to-peer markets in which "owners sometimes use their assets for personal consumption and sometimes rent them out" (Horton and Zeckhauser 2016, p.1). This definition is also supported by Frenken and Schorb (2017). Furthermore, the scope of this study is limited to the *sharing* (as opposed to the *access-based)* context (Bardhi and Eckhardt 2012), which implies intense interaction between suppliers and consumers over the duration of the sharing arrangement.

additional income opportunities (Davidson 2016). Davidson (2016) documented that renting out capital assets (e.g., on Airbnb) translates into extra monthly earnings of about $314. Third, reuse of idle capacities is likely to have a positive effect on environmental sustainability, which is predominantly the case for ridesharing platforms (blablacar.com 2019). Finally, shared experiences inherent in sharing arrangements may contribute to better social connectedness, spurring the creation of social capital among participating parties (PricewaterhouseCoopers 2015).

Having been established as multi-sided markets, sharing platforms show many similarities to traditional e-commerce (e.g., eBay) and access-based platforms (e.g., Zipcar), with users physically detached from each other and the product at the moment of decision making. On the other hand, sharing platforms do not support the transfer of ownership from one party to another, unlike regular cyber businesses. Furthermore, sharing revolves around joint consumption while users of the e-commerce websites and access-based platforms experience segregated consumption, which occurs separately from a supplier. These remarkable properties constitute the particularity of the sharing platforms and are likely to transform the nature of exchanges and agents' behavior.

While numerous advantages draw a promising picture of collaborative consumption, critics are equally firm in questioning the trend (Baker 2014). For example, problems such as money scams, cancelled deals, poor hygiene, noise, an unfriendly attitude of hosts, and even harassment are commonplace (e.g., airbnbhell.com 2019; sitejabber.com 2019; trustpilot.com 2019). This draws attention to amplified information asymmetries surrounding sharing arrangements.

Sources of information failures have already been thoroughly investigated for e-commerce deals, with research distinguishing between seller and product uncertainty (e.g., Chatterjee and Datta 2008; Dimoka and Pavlou 2008; Dimoka et al. 2012; Luo et al. 2012). Similar to other online markets, sharing platforms face the issue of goods and services not being easily described via the Internet interface. As such, sharing transactions are also prone to supplier[4] uncertainty, which stems from the risk that the seller might misrepresent their product's true qualities during the pre-contractual phase and act opportunistically thereafter. The supplier may also be unable

[4] In contrast to purchases, where the *supply-side* is represented by sellers (hence, the seller uncertainty), sharing transactions do not imply transfer of ownership for money. We, therefore, prefer to use the general term "supplier" (hence, supplier uncertainty).

to fully describe all attributes of an asset and anticipate its future performance, which leads to resource[5] uncertainty (Dimoka et al. 2012; Luo et al. 2012). Sharing transactions differ in their nature from e-commerce: The latter involves a transfer of property rights and lets consumers enjoy the exclusive consumption of an asset. Conversely, during sharing, this transfer of ownership does not happen, and participants exercise joint consumption of an asset's idle capacity. Conceivably, these dissimilarities remain a critical but underexplored point that may alter the uncertainties in the sharing context.In this study, we argue that participation in a sharing transaction is marked by another distinct type of uncertainty, which we coin collaboration uncertainty and define as the difficulty in assessing the flow of the collaboration during the period of joint consumption. For example, in ridesharing, even when a consumer is confident about the quality of the car (i.e., resource uncertainty) and the skills of the driver (i.e., supplier uncertainty), the experience of sharing a ride might still not live up to his or her expectations. For instance, the driver might be too chatty or unfriendly, and the consumer may not fully enjoy the ride (i.e., collaboration uncertainty). We theorize that supplier uncertainty and collaboration uncertainty are distinct, yet related constructs. Distinguishing among different types of uncertainty in sharing arrangements is imperative for introducing mechanisms that target a specific strain of uncertainty (Chaiken 1980). Neglecting the aspect of collaboration uncertainty or treating supplier and collaboration uncertainty as a single construct may impede the design of IT-enabled solutions that should explicitly focus on reducing collaboration uncertainty to facilitate more enlightened consumption decisions.

In the following, we will extend the literature on the adverse effects of information asymmetry to include collaboration uncertainty. In doing so, we will demonstrate how each facet of uncertainty can be alleviated with information cues. Further, we test the consequences of uncertainty on key outcomes in sharing markets: the willingness to accept an offer and price premium. We demonstrate that supplier and collaboration uncertainty significantly influence consumers' intention to participate, while resource uncertainty produces only marginal effects. At the same time, price premiums are observed to be impaired by supplier and resource uncertainty.

This paper is organized as follows. First, we revise peer-to-peer multi-sided platforms (MSPs) based on the nature of transactions to identify commonalities with other electronic markets and

[5] While in purchases a product is the subject of a deal, for sharing transactions we prefer to use the general term "resource" (hence, the resource uncertainty).

to establish for the uniqueness of the sharing context. Then we review the extant literature on information asymmetry in electronic markets to pinpoint the knowledge gap that motivates our work. Next, we propose a theoretical model that posits three uncertainty types inherent in sharing transactions, and particularly justify the advancement of *collaboration uncertainty* as a novel construct pertinent to these arrangements. We detail how uncertainties can be relieved with the help of information cues. Concurrently, we spotlight uncertainties as a hindrance to consumers' engagement and price premiums. We then outline the methodological procedures used, during which we bridged qualitative (focus group interviews) and *quantitative (experimental study)* analysis for validating the theoretical model. In conclusion, the implications of our findings for both theory and practice are discussed.

3.2 Towards A Theoretical Model Of Uncertainty In Sharing Arrangements

The theory development is made up of two sections: First, the nature of supplier, resource and collaboration uncertainty is discussed, and hypotheses about their interrelationships are formulated (H1-H2). Second, the possible mitigators of supplier, resource and collaboration uncertainty are anticipated (H3-H5). Finally, the potential effects of uncertainty are outlined (H6-H8). The study framework is presented in Figure 4.

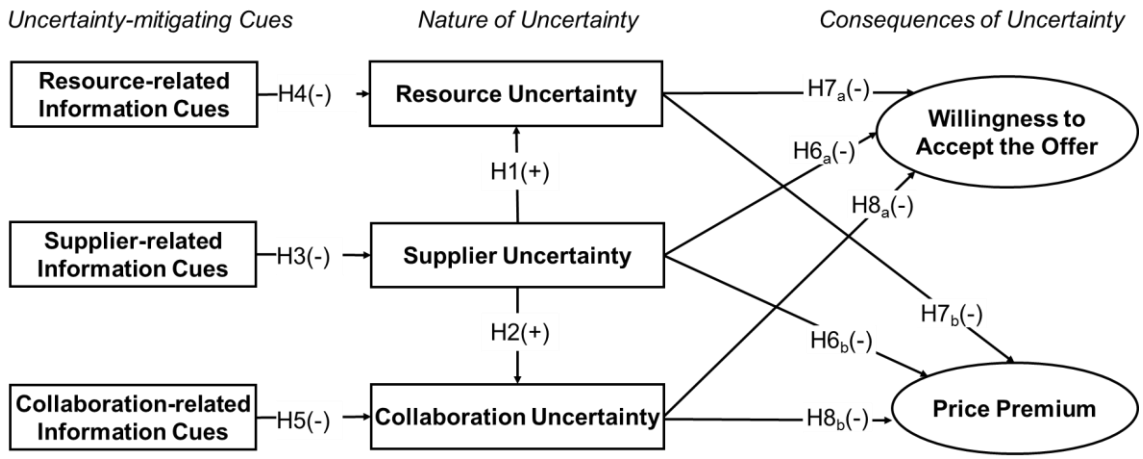

Figure 4. Theoretical model of uncertainty in sharing arrangements

The scope of this study is limited to *sharing transactions,* which imply intense interaction between suppliers and consumers throughout sharing in contrast to the purchasing and access-based contexts (Bardhi and Eckhardt 2012; Mittendorf et al. 2019).

3.2.1 Singularity of the Sharing Economy

Sharing platforms, like Airbnb or BlaBlaCar, share commonalities with traditional peer-to-peer e-commerce (e.g., eBay) and access-based platforms (e.g., Zipcar). As multi-sided platforms (MSPs), they belong to marketplaces that create value primarily by enabling direct interactions between two or more participant groups (Staykova and Damsgaard 2015). However, they also exhibit distinct contextual characteristics that may alter the uncertainties inherent in sharing arrangements. To argue for the singularity of the sharing context, we define peer-to-peer MSPs based on the nature of exchanges (Table 3). The latter, in turn, determines the degree to which each party is involved in the consumption - the sole end of any economic interaction (Smith, 1776). We do not wish to neglect alternative definitions, as these have been reviewed and discussed elsewhere (e.g., Puschmann and Alt 2016). Instead, we want to put forward one particular conceptualization that not only helps to delineate the sharing economy, but can also be used as an analytical tool to distinguish between closely related forms of platforms which are often associated with sharing and thus mistakenly lumped together.

First, purchasing transactions with ownership transfer are marked off. Here, payments are made for the property being passed from one party to another permanently. Examples include selling or buying a Lego set, a used book, dress or car on well-known global marketplaces like eBay, Amazon, OLX, Rakuten or their local alternatives like Allegro in Eastern Europe, Cdiscount in France, eBay Kleinanzeigen in Germany, Craigslist in the USA or Avito in Russia. There is a rich body of IS literature examining uncertainty in purchasing transactions with seller (Pavlou and Dimoka 2006; Pavlou et al. 2007), product (Chatterjee and Datta 2008; Ghose 2009; Dimoka et al. 2012) and platform (Chen et al. 2014; Lu et al. 2010; Pavlou and Gefen 2004) being the most relevant factors. Once the ownership transfer has been completed, the buyer receives full property rights over the object and can regulate or deny access to others, use, sell, and retain any profits yielded from the object's use, and transform its structure (Snare 1972). Therefore, the buyer is the only party experiencing consumption, whereas the seller does not participate in it.

The second group is access-based transactions, with payment made for the temporary use of a property or service owned by another person. Consumers can access objects or networks that they could not afford to own themselves, or chose not to acquire due to space constraints or environmental concerns (Lovelock and Gummesson 2004). Examples include renting a car on Zoplay or an apartment on HomeAway. Access to a resource is similar to sharing in that both modes of consumption do not involve the transfer of ownership (Bardhi and Eckhardt 2012) as

opposed to procurement. Due to this similarity, marketplaces for access-based transactions are often labeled as "sharing platforms". This label is justifiable, since access implies the sharing of usage rights over the resource for a certain period with other individuals. However, the critical distinction of access is that the owner and temporal users use the same resource at different times, not simultaneously. Having temporary access to an asset, the user remains the only party that experiences the consumption while the resource owner does not participate. The consumption experience of access-based transactions thus involves a user and a resource, similar to purchases.

Type	**I**	**II**	**III**
	purchasing transactions	**access-based transactions**	**sharing transactions**
Examples of platforms	eBay, Amazon, OLX, Rakuten, Allegro, Cdiscount, Craigslist, Avito, eBayKleinanzeigen	Zipcar, DriveNow, car2go, ReachNow, GoGet	Car-pooling, sharing an apartment/room on Airbnb or Blablacar
Nature of transactions	with a transfer of ownership	without a transfer of ownership	
Nature of consumption	exclusive consumption		joint consumption
Interaction with seller/supplier	mediated (via platform)	mediated (via platform)	direct and mediated (via platform)
Uncertainty regarding	seller product	supplier of resource resource	supplier of resource resource collaboration

Table 3. Overview of peer-to-peer multi-sided platforms based on the nature of transactions

As a third group, we delineate sharing transactions that focus on the joint consumption of the shared idle capacity. This implicitly leads to a higher intensity of interaction between the parties throughout the time spent together (Mittendorf et al. 2019). In purchasing and access-based transactions, buyers and sellers are unlikely ever to meet personally (Dimoka et al. 2012), and value is created through the so-called exclusive consumption. In sharing transactions, value is created through joint consumption that involves both pure consumers and other collaborators. The latter may be represented through a resource owner only (i.e., a driver or a host) or include other associates (i.e., co-travelers or people staying in the same flat). Moreover, sharing platforms focus on the sharing of intangibles (e.g., a ride or a stay) rather than goods (Knote and Blohm 2016). Here, unique characteristics of intangibles (e.g., heterogeneity as well as inseparability of production and consumption) have far-reaching implications for quality judgments. For example, while the quality of most products can be objectively assessed and described (Parasuraman et al. 1988), the evaluation of intangibles is fundamentally subjective

(Nyeck et al. 2002). This magnifies the risk of sharing arrangements, which in turn complicates the efforts of platform providers in their attempt to inform potential consumers about suitable offerings. Lastly, the quality of shared services is also mostly unregulated (Sundararajan 2014), which may fuel ambiguity.

To sum up, our taxonomy touches upon three types of peer-to-peer platforms, drawing borders in terms of the nature of transaction and value creation practices. **The study will focus on the third cluster, i.e. sharing transactions, setting them apart from purchasing and access-based solutions.** Although cognate with access, sharing does not imply a transfer of ownership. At the same time, its uniqueness leans on joint consumption as the core of value creation connecting provider and consumer. Additionally, sharing is always prosocial (Belk 2010), while access is not necessarily so. Our distinction is also consonant with the typology proposed by Frenken and Schorb (2017), which leans on the notion of sharing as a historical practice to argue for the fundamental differences between "pure sharing activities" and "on-demand services" (e.g., Uber, Lyft or Didi), "second-hand economy" (e.g., eBay or Taobao) and renting goods from a company (e.g., Hertz or Share Now[6]).

3.2.2 Uncertainty in Online Markets

Information asymmetry is part and parcel of economic transactions. Subscribing to a "principle-agent" perspective (Bergen et al. 1992, Mishra et al. 1998), information asymmetries in the e-commerce context have been primarily conceived of as a function of two key components: hidden information and hidden action[7] (Pavlou et al. 2007). While hidden information captures the problem of pre-contractual misrepresentation performed by a seller (i.e., adverse seller selection), hidden action describes post-contractual uncertainty regarding opportunism on the part of the seller (i.e., seller moral hazard). Indeed, in a simple purchase transaction, sellers usually have more information on the quality of their offerings than buyers, which enables *seller uncertainty* (Ba and Pavlou 2002). Suppliers' evaluation is particularly tricky in online transactions due to the physical separation of agents and the resulting inability of buyers to observe social cues like body language and interaction style (Gefen et al. 2003).

[6] Joint venture of BMW Group and Daimler AG after the merger of BMW's DriveNow and Daimler's Car2GO in January 2019

[7] Broadly, hidden information and hidden action represent more practical terms to reflect the theoretical constructs of adverse selection and moral hazard respectively (Akerlof 1970, Rothschild and Stiglitz 1976, Pavlou et al. 2006).

Extending this view, further research (Chatterjee and Datta 2008; Dimoka et al. 2012; Luo et al. 2012) finds that not all actions of the seller are intentional. Sellers may be unable to fully describe and assess the attributes of a product (i.e., adverse product selection), or predict its future performance (i.e., product hazard). This can lead to certain levels of *product uncertainty* for buyers (Dimoka et al. 2012, p.7). Online buyers are especially prone to face *product uncertainty* since they are physically detached from the products and unable to evaluate their attributes (Ghose 2009).

To date, findings explicitly related to uncertainty in sharing transactions remain limited and existing work is mostly theoretical (e.g., Ferrari 2016) or targets only a single component like seller (Lei et al. 2018) or service quality (Frey et al. 2018). Aiming to fill this gap, our underlying assumption is the uniqueness of the sharing context. In light of the particularities of sharing transactions, this study builds on and extends the past works about uncertainty in e-commerce (e.g., Chatterjee and Datta 2008; Dimoka and Pavlou 2008; Dimoka et al. 2012; Luo et al. 2012) to re-conceptualize the nature of uncertainties which consumers in sharing encounters are confronted with.

3.2.2.1 Supplier Uncertainty

Given the similarities to the traditional online markets, sharing platforms inherit their failures, i.e. information asymmetry, compelling the economic agents to make their decisions amid uncertainty. As such, consumers in sharing transactions encounter *supplier uncertainty* (Chatterjee and Datta 2008; Dimoka et al. 2012; Luo et al. 2012), which is rooted in consumers' inability to fully assess the actual characteristics of a supplier (i.e. adverse supplier selection) as well as their actions (i.e. supplier moral hazard). Examples include an Airbnb host misrepresenting their details on the profile or concealing their tendency to cancel transactions at the last moment. Most importantly, in line with past research (Lei et al. 2018), we assume that supplier uncertainty (SU) in sharing arrangements is restricted to the uncertainty regarding professional competences as a service provider. For example, in the ridesharing context, it conveys a difficulty to evaluate a driver's ability to bring the passengers safely from the point of departure to a destination (driving proficiency). In the accommodation sharing context, potential guests would try to gauge whether the host will provide a lodging opportunity for the agreed time (receptionist proficiency).

3.2.2.2 Resource Uncertainty

Second, since sharing arrangements typically involve the use of physical resources (e.g. an apartment in the case of Airbnb and a car in the case of BlaBlaCar), we argue that consumers are exposed to *resource uncertainty* (RU), which captures a certain trepidation about the attributes of shared resources. Analogous to product uncertainty (Chatterjee and Datta 2008; Ghose 2009; Dimoka et al. 2012; Luo et al. 2012), resource uncertainty is a consumer's difficulty in inferring the quality of the shared asset. It is rooted in a supplier's inability to fully describe the resource involved in sharing (i.e. adverse resource selection) or forecast its future "performance" (i.e. resource hazard).

In line with previous conceptualizations (Ghose 2009; Dimoka et al. 2012), we propose resource uncertainty to be distinct from supplier uncertainty. For example, describing every attribute of an apartment (e.g., on Airbnb) or a car (e.g., on BlaBlaCar) is challenging, even if a resource owner would like to do it. Moreover, an Airbnb host or a BlaBlaCar driver may be unaware of impending problems with the heating system or hidden defects of the vehicle.

3.2.2.3 Collaboration Uncertainty

Finally, we surmise that the value co-creation by a supplier and consumer(s) inherent in the sharing transactions may give rise to a novel type of uncertainty, which we call *collaboration uncertainty* (CU). It reflects consumers' inability to fully anticipate the collaboration structure and other participants' behavior during the sharing transaction. As described in Section 2.1, sharing is different from purchase and access because it implies the joint consumption by a supplier and co-sharers. Compared to a cashier or waiter, with whom communication will only last about one or two minutes, staying in the same flat or car for travel assumes deeper and more dynamic interaction. As such, Jung et al. (2016) for instance put forward that a human relationship, rather than a house, is revealed to be the primary shared asset and the foremost satisfaction attribute for Couchsurfing users. An extensive review of past studies (**Fehler! erweisquelle konnte nicht gefunden werden.**A) confirms the importance of the joint experience for Airbnb guests, accentuating value co-creation practices (Bellotti et al. 2015; Camilleri and Neuhofer 2017; Johnson and Neuhofer 2017; Stors and Kagermeier 2015) and communication with the host (Guttentag et al., 2018).

Moreover, P2P accommodation appeals to consumers who are driven by experiential and social motivations. Importantly, for guests staying in a private room that involved cohabitation with

hosts, social benefits were found to influence satisfaction levels. Meanwhile, for those who booked an entire home or apartment, this factor was insignificant (Tussyadiah and Zach 2017). In the ridesharing context, users report having more fun, "a willingness to meet new people and to have a more pleasant and enjoyable trip through mutual collaboration" (Setiffi and Lazzer 2018, p.90). However, these affiliative attitudes develop with experience, once the fear of the stranger is overcome (Setiffi and Lazzer 2018).

The separate examination of group decision-making, as opposed to individual choices, also justifies the effect of value co-creation on uncertainty. Sharing transactions are settings of group decision making, where members must consider ambiguities that emerge as a "result of the fundamental difference between group work and individual work with respect to the contingencies between acts and outcomes: outcomes from group work are generally more uncertain than outcomes from individual work" (Sniezek et al. 1990, p. 59). In game theory, researchers differentiate between structural (also called environmental) and social (also called strategic) uncertainty (Messick et al. 1988).

Applying to the sharing transactions, structural uncertainty designates difficulty in assessing the group's structure and seeks an answer to the question "who are my collaborators/co-consumers/co-travelers or flatmates?" For example, looking for a shared transfer from one city to another, a potential traveler may wonder who will be sitting next to them. Social uncertainty, which is also called strategic uncertainty (e.g., Budescu et al. 1990), is rooted in the skepticism regarding the decisions made by other group members. A consumer is interdependent with other co-sharers during the sharing transaction and may have doubts like "How will my collaborators/co-consumers/co-travelers or flatmates behave during the joint consumption? How will they respond?" For example, potential Airbnb guests may struggle to fully anticipate the interaction that awaits them: Will the guest be able to get on good terms with the host? How will the common usage of shared spaces work? Do the host and the guest have the same views on what is considered "noisy"? Table 4 summarizes the examples of uncertainty inherent in sharing encounters contrasting them to purchases.

Collaboration uncertainty is supposed to be distinct from supplier uncertainty. First, collaboration uncertainty is related to all participants in the sharing action and therefore includes dynamics between other co-travelers or co-inhabitants. Sharing between one consumer and one supplier (e.g. one passenger and a driver, one guest and a host) represents a particular case. In our framework, a supplier usually plays two roles: as a service provider and a collaborator. As proffered by past research (Dimoka et al. 2012; Lei et al. 2018), we theorize

that consumer difficulties in gauging functional competencies (e.g. driving skills or host punctuality) are related to supplier uncertainty. Difficulties/Troubles in the assessment of the driver's social skills (e.g., how talkative they are, how easy-going and cooperative they are) refer to *collaboration uncertainty*. This role separation also corresponds to the universal dimensions of social cognition (competence and warmth) as detailed by Fiske et al. (2006).

	Purchase Transaction (e.g., eBay; based on Dimoka et al. 2012)		Sharing Transaction (e.g., Airbnb, BlaBlaCar)	
Seller | Supplier Uncertainty	Adverse Seller Selection	– The seller does not accurately portray his or her selling practices and characteristics. – The seller intentionally misrepresents his or her identity.	Adverse Supplier Selection	– The host/driver misrepresents their own identity. – The driver misrepresents the driving skills. – The driver misrepresents the hosting experience.
	Seller Moral Hazard	– The seller does not deliver the product on time | at all. – The seller delivers the product of lower quality. – The seller reneges from the agreement.	Supplier Moral Hazard	– The host/driver cancels the transaction. – The host/driver does not appear for the check-in/pick-up on time.
Product | Resource Uncertainty	Adverse Product Selection: Description Uncertainty	– The seller is unable to describe the product thoroughly. – The product description does not adequately portray the product. – The product looks different in real life than on the description.	Adverse Resource Selection: Description Uncertainty	– The host is unable to describe the physical resources involved in a transaction (e.g., apartment, car) thoroughly (e.g., the scent of a car air freshener; the soft touch of a cashmere blanket). – The apartment/car looks differently on photos than in real life.
	Product Hazard: Performance Uncertainty	– The storage of the product | the previous usage of the product may interfere with its future performance. – The product does not perform well.	Resource Hazard: Performance Uncertainty	– The host is unaware of the upcoming problems with the heating system. – The strike of the public transportation company makes the way to the city center more time-consuming and challenging for the guests.
Collaboration Uncertainty			Adverse Collaboration Selection: Structural Uncertainty	– The personality of the customer does not match the personality of the supplier. – The preferences do not match.
			Collaboration Hazard: Strategic Uncertainty	– The collaborators (including supplier) are unfriendly during the sharing situation. – The supplier changes house rules during the customer's stay. – The supplier and customer have diverging views on what is "clean," "noisy," "private." – The interaction during the sharing result in an unpleasant experience.

Table 4. Examples of uncertainty in purchasing (e-commerce) and sharing contexts

3.2.2.4 Relationship between Supplier, Resource and Collaboration Uncertainty

Despite the proposed distinction between three uncertainty types, we expect some interdependences to hold. First, since the supplier depicts the shared asset, supplier uncertainty is expected to affect resource uncertainty. Hosts and drivers who are prone to opportunistic behavior are more likely to provide a superficial description of their property and hide potential

defects. This obstructs a comprehensive assessment of the resource's characteristics and its performance during sharing on the side of the consumer. Past studies deliver conflicting findings: Some researchers report substitution effects between the product-based and seller-level uncertainty (Anand and Shachar 2004), while others register no consistent evidence of a substitution or complementarity relationship (Ghose 2009). More recent studies elaborate on the reinforcing effect of the seller uncertainty (Dimoka and Pavlou 2008; Dimoka et al. 2012). We thus hypothesize:

H1: Supplier uncertainty has a positive influence on resource uncertainty.

Second, because a supplier always participates in sharing, supplier uncertainty should affect collaboration uncertainty. We assume that doubtful suppliers who suffer from consumer fear of adverse selection may willingly hide or misrepresent their real personality (e.g. fail to describe who they are), thus enhancing structural uncertainty. Moreover, consumers feeling skepticism regarding suppliers' competences may extrapolate these fears to cooperative capabilities of the supplier (e.g. interaction experience). We, therefore, hypothesize:

H2: Supplier uncertainty has a positive influence on collaboration uncertainty.

3.2.3 Mitigators of Uncertainty

We conceptualize uncertainty as a consumer information problem due to the difficulties in assessing the actual quality of the three constituents of sharing – supplier, resource and collaboration process. To combat this disadvantage, research on choices under ambiguity suggests that individuals look for credible information to anticipate the actual characteristics of a deal (Moon and Tikoo 1997), with the majority of studies leaning either on cue utilization theory (Richardson et al. 1994; Zeithaml 1988) or the signaling theory (Spence 1973). Both approaches propose that when a consumer encounters an environment with information asymmetry and hence with ambivalence about quality, they tend to focus on the available informational cues within that context (Jain and Posavac 2001). The less experienced the users are, the more likely they are to rely on signals to form expectations about quality. In our investigation of the sharing arrangements, we focus on IT-supported cues (Benlian and Hess 2011) – which are defined as artifacts or IT features that pass on information about unobservable properties of the supplier, product or another critical component of the exchange on the user interface of a sharing platform– as the principal mitigators of uncertainty.

3.2.3.1 Supplier Uncertainty Mitigating Cues

Several cues targeting multiple facets of supplier uncertainty have been proven to be valid in virtual environments (Table 5). In e-commerce, for example, website informativeness has been proposed as a means of mitigating the adverse selection problem, since seller self-descriptions could make the other party appear more forthcoming and hence less opportunistic (Pavlou et al. 2007). To enhance consumer confidence, sellers also voluntarily subject themselves to independent audits by third parties, which certify their business practices and contractual fulfillment (e.g., "Trusted Stores" by Google) (Benlian and Hess 2011; Cheung and Lee 2006; Huang et al. 2005). Moreover, disclosure of provider identity (Benlian and Hess 2011) and other signals that convey the presence of the human seller behind the website (Pavlou et al. 2005; Pavlou et al. 2007) increase actual participation. Feedback systems in the form of reviews, scores and ratings (Benlian and Hess 2011; Dimoka et al. 2012; Li et al. 2009; Siegfried et al. 2015) are illustrated to increase consumer engagement.

Source	Link tested	Theoretical Foundation	Context
Huang et al. (2005)	Seal→trust (-)→purchase intention (-) Structural assurance→ perceived risk (-) →purchase intention (-)	Signaling theory; trust transference process	e-commerce
Pavlou et al. (2007)	Website informativeness→ fears of seller opportunism (-) →uncertainty(+)→purchase intention (-)→actual purchases(+) Seller's social presence→information privacy&security concerns(-) →uncertainty(+)→purchase intention (-)→actual purchases(+)	Signaling theory	e-commerce
Gregg and Walczak (2008)	E-image(incl.customer service policies) → willingness to transact(+) E-image(incl.customer service policies) → price premium(+)	Signaling theory	eBay
Li et al. (2009)	Seller rating→participation(+) Third-party payment→participation(+) Money-back guarantees→participation(+)	Signaling theory	eBay
Benlian and Hess (2011)	Disclosure of identity of community provider→actual participation(+) Transparency of goal and purpose→perceived participation (+) Rating/reputation mechanisms→perceived participation (+) Content quality checks through experts → perceived and actual participation (+) Report of unacceptable behavior → perceived and actual participation (+)	Signaling theory	e-commerce
Dimoka et.al. (2012)	Positive ratings→ uncertainty(-)→ price premium(-) Negative ratings → uncertainty(+)→ price premium(-) Dealer vs. individual → uncertainty(-)→ price premium(-)	Signaling theory	eBay
Bui et al. (2013)	Seller rating score→ price (-)	Signaling theory	eBay
Siegfried et al. (2015)	Vendor reputation→expected app quality(+)→installation likelihood(+)	Signaling theory	App store
Abramova et al. (2017)	Verified personal ID of a host→listing choice(+)	Signaling theory	Accommodation sharing
Yang et al. (2018)	Host's credibility cues (star-rated scores and reviews)→ trust in Airbnb host (+)	Aristotle's rhetorical theory	Accommodation sharing

Table 5. Supplier-related Cues Found in Prior Empirical Studies

Peculiarities of sharing arrangements, however, may exacerbate contemporary challenges of online transactions because suppliers are private individuals whose expectations

are generally less defined and regulated. To address this, popular sharing platforms offer a variety of options for self-disclosure, including visual and textual descriptions that help in solving the adverse selection problem. Suppliers are also frequently given the possibility to authenticate their profiles with their offline IDs or social media accounts to mitigate the risk of moral hazard (see Table B1, Table B2 in Appendix B). These assurances serve as signals of seller trustworthiness, facilitating transactions and price premiums in sharing arrangements. To date, studies in sharing context evidenced the significance of host's credibility cues, including star-rated scores and reviews and verified personal ID (Abramova et al. 2017; Yang et al. 2018). We therefore hypothesize that:

H3: Supplier information cues are negatively associated with supplier uncertainty

3.2.3.2 Resource Uncertainty Mitigating Cues

Addressing product-related uncertainty, past studies (Table 6) came to a consensus that meaningful product descriptions may yield insight into the attributes of the offering, thereby reducing consumers' concerns regarding information asymmetries (Gregg and Walczak 2008; Pavlou et al. 2007; Tang and Lin 2016). However, the strength of this signal is likely to be contingent on the form of the presentation at hand. A pure textual description can be perceived as a rather weak signal, since sending it does not imply any additional cost for the seller (Baker and Song 2007; Jin and Kato 2006; Hong 2010). At the same time, presenting visual images of the product can be seen as differentially costly, since sellers have to devote time to shoot such photos, and the probability of revealing product defects on multiple pictures is much higher (Hong 2010; Li et al. 2009; Vishwanath, 2004). The same is valid for videos as rich media tools (Hong and Pavlou 2010; Tang and Lin 2016). By mitigating the "talk is cheap" problem, third-party assurances may further resolve ambiguity (Dimoka et al. 2012). Examples include certifications, inspection reports or product histories. Together, they enhance a buyer's confidence regarding the real qualities of the product and its future performance (Shimp and Bearden 1982).

Popular sharing platforms also provide suppliers with multiple opportunities to communicate the characteristics of the physical resources involved in the sharing transaction (see Appendix B). These include functionalities to upload photos, enter textual descriptions and other contextual information. Moreover, on accommodation sharing platforms, the display of apartment photos can be combined with a third-party assurance that certifies their authenticity. Together these mechanisms should mitigate resource uncertainty, which in turn aids in

promoting transactions and attracting price premiums (Dimoka et al., 2012). So far in sharing arrangements, past studies illustrate the significance of clear and understandable information about the accommodation and verified apartment photos (Abramova et al., 2017; Yang et al., 2018). We therefore hypothesize that:

H4: Resource information cues are negatively associated with resource uncertainty

Source	Link tested	Theoretical Foundation	Context
Vishwanath (2004)	Product picture→number of bidders(+)	Signaling theory	eBay
Pavlou et al. (2007)	Product diagnosticity→ fears of seller opportunism (-) → uncertainty(+)→purchase intention (-)→actual puchases(+)	Signaling theory	e-commerce
Gregg and Walczak (2008)	E-image(incl.product descriptions) → willingness to transact(+) E-image(incl.product descriptions) → price premium(+)	Signaling theory	eBay
Li et al. (2009)	Multiple picture postings→participation(+)	Signaling theory	eBay
Hong (2010)	1-picture →product description uncertainty(-) Multiple pictures →product description uncertainty(-) Video Presentation →product description uncertainty(n.s.) Text Presentation →product description uncertainty(n.s.)	Signaling theory	e-commerce
Hong and Pavlou (2010)	Multiple pictures →product description uncertainty(-) Multiple pictures →product performance uncertainty(-) Real pictures→product description uncertainty(-) Video presentation →product description uncertainty(-)	Signaling theory	e-commerce
Fu and Sim (2011)	Pictorial preview for videos→bandwagon effect(-)	Dual-processing, information cascade model	RSS videos
Dimoka et.al. (2012)	Product descriptions→ uncertainty(-)→ price premium(-) Third-party assurances → uncertainty(-)→ price premium(-)	Signaling theory	eBay
Bui et al. (2013)	Number of car pictures→ price (n.s) Number of car movies→ price (-) third party's inspection report→ price (-) third party's history report → price (n.s.) third party's warranty report→ price (n.s)	Signaling theory	eBay
Siegfried et al. (2015)	Average rating→expected app quality(+)→installation likelihood(+) Rating volume→expected app quality(+)→installation likelihood(+)	Signaling theory	App store
Tang and Lin (2016)	Perceived effectiveness of product descriptions→product description uncertainty(-) Perceived effectiveness of product descriptions→product performance uncertainty(-)→purchase intention (-) Perceived media richness→product description uncertainty(-)	Initial interaction Theory	e-commerce
Abramova et al. (2017)	Verified apartment photo→ listing choice(+)	Signaling theory	Accommodation sharing
Sulaeman and Lin (2018)	Funding goal→donations(+) Writing style→donations(+) Spelling errors→donations(n.s.) Grammar errors→donations(n.s.) Number of words→donations(+)	Signaling theory	Crowd-funding
Yang et al. (2018)	Accommodation characteristics→ trust in Airbnb host (+)	Aristotle's rhetorical theory	Accommodation sharing

Table 6. Resource/Product-related Cues Found in Prior Empirical Studies

3.2.3.3 Collaboration Uncertainty Mitigating Cues

By parity of reasoning, this uncertainty facet can be tackled with the help of information cues. Expecting an interaction with strangers, people rely on clues to overcome the lack of familiarity (Bansal et al. 2016). According to the ecological approach to social perception (Gibson 1979), individuals' faces provide adaptive information about the social interactions to be expected from them. General willingness to collaborate and to trust actors with trustworthy-looking faces (e.g., Tingley 2014; Van't Wout and Sanfey 2008) hold in the sharing domain. Human pictures, in contrast to avatars, convey social presence and trustworthiness which is further reflected in sharing behavior (Teubner et al. 2014) and interest in examining the Airbnb listing's webpage (Fagerstrøm et al. 2017). Apart from images, host's responsiveness (Lee et al. 2015), emotional bonding cues related to hosts' personalities (Yang et al. 2018) and common ground with the guest (Abramova et al. 2017) are shown to induce trust in accommodation sharing context. Table 7 summaries past studies on collaboration-related cues.

Source	Link tested	Theoretical Foundation	Context
Teubner (2014)	Picture humanization→perceived anonymity(-)→sharing behavior(-) Picture humanization→perceived social presence(+)→trustworthiness (+)→reciprocity (+)→sharing behavior(+)	Sharing behaviors, social presence, anonymity	Sharing game
Lee et al. (2015)	Host's response time →room sales(+)	-	Accommodation sharing
Abramova et al. (2017)	Common ground with the host→listing choice(+) Number of Facebook friends→listing choice(n.s)	Signaling theory	Accommodation sharing
Fagerstrøm et al. (2017)	Negative facial expression →tendency to explore the Airbnb listing's webpage (-) Negative facial expression→ likelihood to rent (-) Absence of facial image (head silhouette) →tendency to explore the Airbnb listing's webpage (-) Absence of facial image (head silhouette) → likelihood to rent (-) Neutral/positive facial expression →tendency to explore the Airbnb listing's webpage (+) Neutral/positive facial expression → likelihood to rent (+)	-	Accommodation sharing
Ert et al. (2016)	Host's photo→ visual-based trust (+)→likelihood to rent (+) Host's photo→ host's attractiveness (+)→likelihood to rent (+)	-	Accommodation sharing
Yang et al. (2018)	Emotional bonding cues related to hosts' personality → trust in Airbnb host (+)	Aristotle's rhetorical theory	Accommodation sharing

Table 7. Collaboration-related Cues Found in Prior Empirical Studies

To alleviate concerns about the future collaboration experience, sharing platforms strongly encourage their users to reveal information about their preferences (e.g. level of chattiness, tolerance to smoking and pets during the trip or stay, music tastes, parties/events during the stay), interest and personality (see Table B1, Table B2 in Appendix B). Moreover, because positive assessments by others can decrease one's own fears (Chen et al. 2004), consumers are asked to give feedback on interactions upon the conclusion of the sharing (e.g. Edelman and

Luca 2014). This hints at the paramount importance of collaboration-related signals to reduce uncertainty. We therefore hypothesize that:

H5: Co-travelers information cues are negatively associated with collaboration uncertainty

3.2.4 Consequences of Uncertainty

Hard to avoid, uncertainty is shown to be undesirable across a variety of disciplines. Neuroscience research substantiates that ambiguity requires more brain effort to analyze, complicates decision-making and can trigger negative emotional responses (Zorumski and Rubin 2011). In line with this, many social science experiments have demonstrated the preference for the clear over the unknown (e.g., Camerer and Weber 1992; Ellsberg 1961).

Uncertainty has been widely proven to be as the main obstacle in consumer engagement in online transactions (Pavlou et al. 2007; Verisign 2006; Yazdanifard et al. 2011). Specifically, failure to assess sellers' ability and credibility is linked to lower purchase intention (Choe et al. 2008; Teo et al. 2004), satisfaction levels (Luo et al. 2012) and willingness to engage in a sharing transaction (Abramova et al. 2017; Ert et al. 2016; Frey et al. 2018; Teubner 2014). Conforming this relationship to the context of our study, we assume that consumers are less likely to choose offers that involve a high degree of uncertainty related to a supplier. We thus hypothesize:

H6a: Supplier uncertainty is negatively associated with the willingness to accept an offer.

Supplier uncertainty is also assumed to be negatively related to price premiums. The price premium can be defined as the monetary reward above the average price for a particular product (Ba and Pavlou 2002). The negative effect of supplier uncertainty is justified by information asymmetry theory (Akerlof 1970): Being unsure about the seller's decency, consumers that are on average risk-averse and rational believe that profit-maximizing sellers will provide low-quality products. In response to this, the purchasing side prefers to offer lower than fair prices. In contrast, the ability to gauge the expected reliability of the seller has been reflected in the willingness to pay (e.g., Ba and Pavlou 2002; Choe et al. 2008; Dimoka et al. 2012; Kim and Benbasat 2009; Matt and Hess 2016; Wu et al., 2013). We thus hypothesize:

H6b: Supplier uncertainty is negatively associated with price premiums.

Conforming to transaction cost economics theory, product uncertainty has been shown to raise transactional costs, which are negatively related to willingness to buy goods via the Internet

(Teo et al. 2004; Teo and Yu 2005). Moreover, the online environment, due to the consumer's physical detachment from products, magnifies information skewness, with further studies based on *asymmetric information theory* agreeing on the negative impact of product uncertainty on the likelihood to transact (Pavlou et al. 2007; Tang and Lin 2016) or install a mobile application (Siegfried et al. 2015). Another rationale leans on the affective response-satisfaction literature (Taylor 1994), which treats uncertainty as an adverse emotional reaction, impacting the customer's assessment of overall performance. Consequently, product uncertainty was found to be related to decreased satisfaction (Luo et al. 2012). We believe that this relationship holds in the sharing arrangements, and potential users are less enthusiastic when they do not know the characteristics of an asset (e.g. apartment or vehicle) they are planning to use jointly. We thus hypothesize:

H7a: Resource uncertainty is negatively associated with the willingness to accept an offer.

When product features are unclear, consistent with their expectations of the low quality of the product available, consumers will pay less. The increase in quality consciousness, vice versa, corresponds to higher price premiums, especially for experience goods which are difficult to evaluate in advance (Boatto et al. 2011; Dimoka et al. 2012; Rao and Bergen 1992). In the case of the food traceability system, mitigated uncertainty is reported to play a vital role in price premium (Choe et al. 2008). Following this line of reasoning, we assume that consumers who are unaware of the condition of the shared resource are likely to pay less compared to those who are well-informed of its exact attributes. We therefore hypothesize:

H7b: Product uncertainty is negatively associated with price premiums.

As a collective decision-making setting, sharing is believed to be more unpredictable in terms of future outcomes (Sniezek et al. 1990). Moreover, it requires different behavior than in individual choices since pursuing one's own interests during collective consumption may lead to suboptimal outcomes known as social dilemmas (Weber et al. 2004)**.** In particular, under the condition of high social uncertainty, environmental uncertainty was found to lead to decreased cooperation (Wit and Wilke 1998).

Considering the essential role of the social component in sharing transactions, in contrast to purchases and access (e.g., Belk 2010; Tussyadiah and Zach 2017; Appendix A), uncertainty about the flow of interaction may impede participation. As such, perceived anonymity of collaboration partners is shown to discourage sharing (Teubner 2014). Similar to other types of uncertainty, collaboration uncertainty is costly. Users are worried about how smooth the joint consumption will happen and are afraid of awkward situations caused by co-sharers

(airbnbhell.com 2019; Cornish 2018; Setiffi and Lazzer 2018). This increases transaction cost as consumers spend more time searching for suitable collaboration counterparts and monitoring their transactions. We postulate that collaboration uncertainty negatively influences the intention to accept the sharing opportunity and thus hypothesize:

H8a: Collaboration uncertainty is negatively associated with the willingness to accept an offer.

Unlike purchase and access where the subject of a deal is a product or resource, sharing revolves around temporal joint consumption. In fact, collaboration (e.g. a trip or stay together) is the primary asset on sharing platforms and a source of satisfaction (Jung et al. 2016), for what consumers are supposed to pay. In general, satisfied customers were evidenced as willing to pay more (Homburg et al. 2005). Because uncertainty is perceived as adverse circumstances, potential users are likely to bid less if they are unsure what experience to expect. Especially pessimistically biased individuals (Mansour et al. 2006) under uncertainty may fear conflicts and offensive behavior in groups, which in turn decreases payments. For example, a discrete choice experiment for ridesharing estimated that co-travelers generate a "discomfort" cost of 4.5 euros per extra passenger in the same car (Monchambert 2019). We therefore hypothesize:

H8b: Collaboration uncertainty is negatively associated with price premiums.

Figure 4 summarizes the proposed hypotheses.

3.3 Research Methodology

We adopt a two-stage approach to validate our theoretical model (Figure 4. Theoretical model of uncertainty in sharing arrangements). In the first step, we use content analysis to process two focus group interviews, which reinforce our conceptualization. In the second step, we use experimental design to evaluate the model of uncertainty in the sharing context.

3.3.1 Focus Groups

3.3.1.1 Set-up, Data Collection and Sample Characteristics

To obtain personal attitudes to sharing arrangements, two focus group interviews were conducted. The main advantage of this method is the researcher's ability to "tease out the strength of participants' beliefs and subtleties about the topic that may be missed in individual interviews" (Campbell 1988). The interviews were guided by a structured set of open questions

on concerns based on the literature reviewed and discussion among the authors of this paper. Specifically, the following question was included in the protocol:

When considering a sharing transaction offer (e.g., ridesharing or room sharing) on an online platform, what are your main concerns/fears/doubts?

The same moderator organized two focus group interviews with seven students in the first and five students in the second group at a German university in the summer term of 2017. According to a short questionnaire completed at the beginning of the discussion, the sample is slightly male-dominated (58.3%). The age range of the participants is between 19 and 26 years. This fits the typical user portrait: Around one-third of consumers aged 18-44 have tried four or more sharing services, while 56% of respondents aged 65+ have claimed no exposure at all to these services (Smith 2017). 41.6% of the participants use the sharing platforms every three to four months, 33.3% of participants use them infrequently, 16.6% use them once or twice a year, and 8.4% use them monthly. Nine participants have used the platforms as consumers, and one of them has used them as a provider, sharing a home or a car. Most of the participants (eight out of eleven) describe their sharing experience as positive, while three participants had mixed experiences. Table C1 (Appendix C) presents the demographics of the focus groups' participants in detail.

3.3.1.2 Data Analysis

Each focus group lasted approximately one hour, and was recorded in video and audio and transcribed. The authors reviewed potential discrepancies of the transcription and recordings. To perform a more precise analysis, the data was unified and presented as a single sample. Our study focused on understanding and documenting salient user practices and perceived concerns. Appendix C (Table C2) provides a summary of participants' opinion on the research question, the frequency of answers and example responses.

3.3.1.3 Results of Focus Groups

Our primary research question relates to possible concerns about sharing service users before transactions. The participants often supported their opinion with their past experiences. For one, suppliers' competencies were questioned (P2.1: "*It was like 5 minutes away and we went there 15 minutes*") as well as punctuality and reliability ("*It is not always reliable", "If there are people who use the same shared car, they don't wait, I mean just five minutes or 10 and they go*"). A general fear of meeting strangers was expressed, for instance by P3: "*I was really scared*

because I started using it the first year when I was nineteen. The first time I took it, it was a car with fifty years old man and I was like…ok, I gonna try it [sic!]… and yeah… the website makes me feel sure because he collected with this feedback system".

Another cluster is formed of concerns regarding the flow of interpersonal communication. Here respondents expressed a feeling of uncertainty about how to behave correctly, whether they should talk or rather keep silent to make everyone feel comfortable during the joint consumption. P2.2 pointed out: "*You don't know should we talk as friends or should we keep it on a formal level. And if it's only a formal level conversation easily runs out, and it easily gets a little awkward*". A participant from another focus group told the interviewer: "*I don't like silence so… I am always [thinking] hmmm heyyyy… what is wrong?"* Interestingly, the priority of this factor increases with the transaction duration. As P2.4 concludes: "*If we have to spend a long time together, it's important. It will be nice if it's a nice person or just a not so weird person*".

Further concerns are associated with the resource misrepresentation on the platform including location, number of sleeping places or cleanliness issues: "*It [the apartment] didn't have any beds. We spend the first day just cleaning because it was really dirty*" (P2.5). P5 reported a similar experience: "*A map said it was in the center of town and but it actually wasn't in the center of town. She drove us 10 minutes by car, like an hour by walking …and it was a small apartment, and it said it had three beds, but two of the beds were really disgusting, with dog hair and stuff like that*". Finally, respondents alluded to legal issues for both accommodation and ridesharing contexts (P2.3: "*Legal aspects are weak compared with for example the booking of traditional offers*" or P2.2: "*You don't know if they [drivers] pay the taxes, so you don't know if it's legal or not*").

Altogether, the findings from the two focus groups confirm the theoretical framework described above. In particular, among factors hampering participation, three clusters can be distinguished: 1) concerns related to the competences of the driver/host, 2) concerns about the flow of interpersonal communication, and 3) concerns associated with the misrepresentation of the shared resource's features. Moreover, our results are in line with another qualitative study which dealt with the concerns about safety and privacy. In it, participants mainly questioned driving abilities of a stranger, expressed concerns about social norms like talking or smoking during the trip and feelings of social awkwardness as main barriers of ridesharing in Denmark (Nielsen et al. 2015). In short, from the qualitative analysis, we do not detect other new dimensions of uncertainty that are different from the three ones we conceptualized.

3.3.2 Experimental Study

3.3.2.1 Experiment Design

To further validate our theoretical model with quantitative data, we proceed with the experimental study. We formulate uncertainty in sharing arrangements as a consumer-centric information asymmetry problem that can be traced back to difficulties in estimating true qualities of the: 1) supplier, 2) physical resource, and (3) collaboration. To resolve these insecurities, consumers are likely to lean on information-based cues that aid in mitigating these three types of uncertainties (Boatto et al. 2011; Chaiken 1980). To check the proposed hypotheses (Figure 4), we rely on 2 (presence or absence of seller-related cues) x 2 (presence or absence of resource-related cues) x 2 (presence or absence of collaboration-related) between-subject design (Table 8).

Card #	Information about supplier (driver)	Information about resource (car)	Information about collaborators (co-travelers)
1	present	absent	absent
2	absent	present	absent
3	absent	absent	present
4	present	present	absent
5	present	absent	present
6	absent	present	present
7	present	present	present
8	absent	absent	absent

Table 8.Full-factorial experimental design

To minimize confounding effects, special attention was paid to the transaction context selection. Accommodation sharing platforms allow for both sharing and renting transactions (e.g. when the whole apartment or house is sublet), with the latter implying minimum interaction with the host (e.g. checking-in or returning the key). On the other hand, during ridesharing, communication is difficult to avoid since travelers sit in the same vehicle. A study on BlaBlaCar with a representative sample of 4.733 members from 9 countries infers that carpooling users feel joint responsibility, which implicitly leads to cooperation. For example, in over 90% of cases, an agreement was reached collectively between co-travelers on the temperature in the car, the number of breaks during the journey, or the size of luggage (BlaBlaCar 2018). Therefore, we opted for ridesharing as a context for this study.

To avert a self-selection bias (e.g. experienced sharing economy users may be less concerned about uncertainty), the study was open to everyone who had a good command of English. To

control for experience, participants were initially asked about the frequency of their use and awareness of the ridesharing services like BlaBlaCar, Mitfahrgelegenheit, Flinc. Subsequently, a ridesharing platform with the fake name "Join&Joy" was introduced to the participants to avoid any reputational effects of the current market players. Presented with the main functional features of the platform, respondents were asked to express their initial attitude to it.

All scenarios began with a setup in which participants were asked to imagine that they were planning a trip from London to Glasgow and looking for a ridesharing opportunity as a cheaper way to travel. Respondents expressed their opinion on the realism of this hypothetical situation. After that, interviewees were randomly assigned to one of eight experimental conditions. Here, they had to assess their willingness to accept the ridesharing offer and willingness to pay for it. To ensure realistic responses, we provided the average price for a similar distance on the fictional platform as a reference (i.e. 45 GBP). The exact value resulted from the screening of the BlaBlaCar offers for the same route in March-April 2019 (BlaBlaCar 2019). Appendix D presents an example for the introductory scenario (Figure D1), and treatments as shown to participants (Figure D2). Appendix E elaborates on the process of the experiment.

Manipulation checks ensured that the experimental conditions were successfully processed and interpreted by participants. In particular, we checked whether a respondent had noticed the information cues in the offer correctly, and screened out those respondents who did not pay attention (Appendix G). Furthermore, participants were asked to assess how certain or uncertain they felt about a driver (supplier), car (resource) and co-travelers (collaboration). Finally, a series of potential confounds were incorporated (Appendix F).

Perceived usefulness is a potential user's belief that the use of a sharing platform will enhance his or her experience of a specific activity (e.g. traveling, accommodation, etc.) (Davis 1989). Since perceived usefulness has been evidenced to influence the online purchase intention in several studies (Chiu et al. 2009; Sohn 2017) including meta-analysis (Wu and Ke 2015), this construct was included as a control variable on our outcome variables.

Propensity to trust is an individual inclination to believe in the trustworthiness of another party and results from socialization (Gefen 2000). Whether related to other people (Pavlou and Gefen 2005) or online vendor (Stewart 2006), the general tendency to trust was shown to be positively linked to behavioral intentions online. In our experiment, we control for both.

As for consumer demographics, previous studies have documented that gender and age (Shao 2018) affect an individual's willingness to engage in sharing (Böcker and Meelen 2017). For example, females were shown as less likely to carpool than males (Monchambert 2019). Income

was shown to be negatively associated with the intention to participate in sharing economy (Böcker and Meelen 2017; Frey et al. 2018). Moreover, it is conceivable that willingness to pay and consequently price premium would present a different meaning for wealthy people. Therefore, gender, age and income were added as control factors on outcome variables.

3.3.2.2 Sampling and Sample Characteristics

An online questionnaire was distributed via a Prolific Academic platform (Palan and Schitter, 2018; Teubner et al. 2019) in March-April 2019. Participation was compensated with £1.30, which corresponds to a rate of £6.50 per hour. In total, 543 people accessed the survey. Of them, 214 were screened out because of the failed manipulation check, attention check or bot check. For the remaining 329 observations the following sorting criteria were applied: 1) duration longer than 5 min [2 observations were excluded]; 2) passed attention check ("Please mark here "Strongly agree" to answer this question") [8 observations were excluded]; 3) absence of straightlining, i.e. when a respondent repeatedly chooses the same answer option [20 observations were excluded]. After deleting unusable cases, a final net sample of 299 observations was obtained.

50.5 % of the sample were males; 50.8% are full-time employees, 14.6% work part-time and 15.6% are students. The majority of respondents (62.8%) had already tried ridesharing services, and 31.2% of non-experienced respondents could imagine to use them in the future. In terms of age, 74.7% of the sample were between 18 and 40 years old (mean=34.3, median=32, SD=11.27), which corresponds to the sharing services demographics. Descriptive statistics are given in Appendix H.

Presented with the functionality of the ridesharing platform "Join & Joy", the majority of subjects reported positive attitude to it as measured with the 7-point semantic differential scale adopted from Malhotra et al. (2005): "All things considered, my use of this kind of ridesharing platform as a passenger would be a" ... "foolish - wise idea" (Mean=5.09, SD=1.28); "harmful-beneficial idea" (Mean=5.27, SD=1.39); "bad - good idea" (Mean=5.25, SD=1.34).

3.3.2.3 Development of Measurement Scales

To test our hypotheses, we relied on pre-tested scales wherever possible. Nevertheless, it was necessary to modify most of the scales to fit the sharing context. Particular attention was paid to the operationalization of the construct of collaboration uncertainty, which appears to be a lineament of joint consumption. The content validity of the adapted and newly developed scales

was ensured with the help of pre-tests ($N_{pre-test1}$=208, $N_{pre-test2}$=83). After pre-tests with 208 and 83 users, several items with low inter-item correlations within a construct were eliminated. The full list of items included in the pre-tests is available from authors upon request. The resulting list of items and their originating sources are presented in Appendix F. Most of the items were measured on a seven-point Likert scale, with all constructs in the study modeled as being reflective. To compute price premium, we first asked participants the following open question: "The average price for a similar distance on this platform is 45 GBP. Looking at the offer above, what is your maximum willingness-to-pay for it?" We then subtracted the average price for the same distance (45 GBP in our case) from the value received to obtain the price premium.

3.3.2.4 Analytical Results

We used Structural Equation Modeling to evaluate the research model presented in Figure 4. Given that our empirical study is primarily based on theory obtained from an extensive literature review, and that it incorporates some exploratory elements from the focus groups, we consider the partial least squares (PLS) method to be adequate. To account for the fact that some of the measurement scales had to be adapted to the sharing context, we decided to run an Exploratory Factor Analysis (EFA) before analyzing the Measurement Model and Structural Model. Consequently, the evaluation of the research model involved three stages: Explorative Factor Analysis of the items, Confirmatory Factor Analysis (CFA) of the Measurement Model and evaluation of the Structural Model (SM).

3.3.2.5 Validation of Measurement Model

Explorative factor analysis: A principal components factor analysis with a varimax rotation was performed on the collected data using SPSS 22 to check if the theorized uncertainty constructs in our model were also reflected in the extracted factor groups. All items loaded on the uncertainties they were supposed to measure (Appendix I). Only seven out of 38 items had loadings between 0.6 and 0.7, with the rest exceeding the threshold of 0.7. Analysis using Principal Axis Factoring as an alternative extraction method resulted in similar conclusions. After careful examination of loading and cross-loadings, several items were eliminated.

Confirmatory Factor Analysis: Building on the EFA results which assert the threefold structure of uncertainty, in the next step we assessed reliability and validity of the constructs through a CFA with AMOS 26. In this analysis, all items with loadings higher than 0.6 were

included and restricted to load on the respective construct they were supposed to measure. The correlation between factors was allowed. In the process of model adjustments, several items were removed. Since some items in our instrument were self-developed, this practice is acceptable as long as content validity is ensured (Segars 1993). The resulting model is shown in Figure 5.

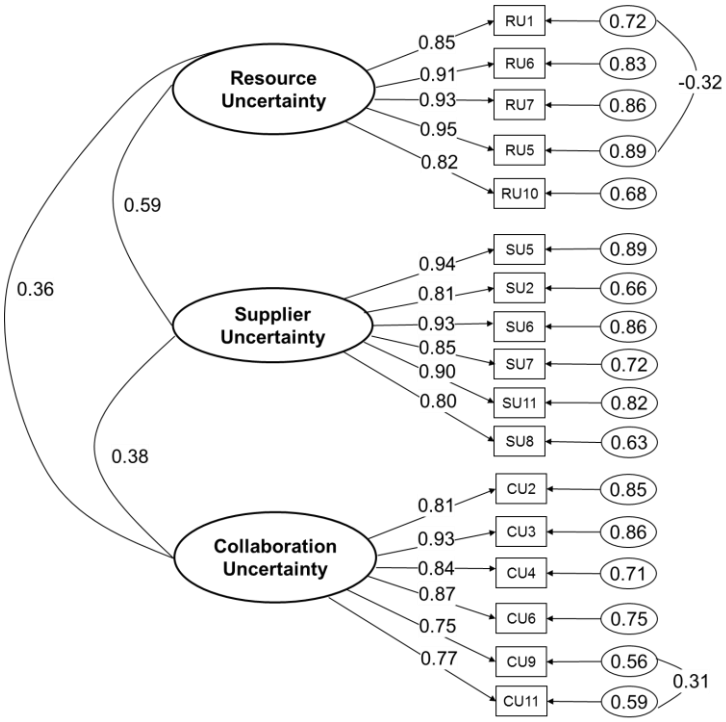

Figure 5.Uncertainty constructs – CFA results

Goodness-of-fit measure	Cut-off criterion	CFA
p-value for the χ^2-test according to Bollen-Stine bootstrap	>0.05 (Byrne, 2016)	0.073
GFI	>0.9 (Byrne, 2016)	0.929
AGFI	>0.8 (Byrne, 2016)	0.905
RMSEA	<0.06 (Hu and Bentler, 1999)	0.047
CFI	>0.95 (Hu and Bentler, 1999)	0.985
IFI	>0.95 (Hu and Bentler, 1999)	0.985
TLI	>0.95 (Hu and Bentler, 1999)	0.983

Table 9.Goodness-of-fit measures for confirmatory factor analysis

Various goodness-of-fit measures are presented in Table 9. In our sample, every variable departs significantly from normality according to the critical ratio criterion. Therefore, to assess the overall model fit, the Bollen-Stine p-value was used (Byrne 2016). The bootstrapping with 5.000 samples rendered a p-value of 0.073, which allows us to conclude an adequate fit. Alternative GoF measures (absolute fit indices, parsimony correction indices, comparative fit indices) also satisfy the cut-off values recommended by Hu and Bentler (1999) and endorsed by Brown (2014). Altogether, these tests suggest that the measurement model is well specified.

The results validate the measurement properties of the uncertainty constructs, with all items having loadings higher than 0.75. We therefore used the instrument for further evaluations.

Next, we assessed the measurement model in partial least squares using SmartPLS 3.0 software (Ringle et al. 2015) to determine convergent validity, discriminant validity, and reliability. The statistics reported in Appendix G suggest that all three are acceptable. We also checked for multicollinearity and common method bias. The results indicate that multicollinearity and common method bias are not an issue in our model. Detailed results for all tests are provided in Appendix J.

3.3.2.6 Validation of Structural Model

We ensured participants *put themselves* in the hypothetical travel *situation described in the scenario and made lifelike choices by asking them to indicate their level of agreement with the statement: "*It is realistic that I consider such a platform when planning this trip" (1= strongly disagree to 7= strongly agree). T-test for the whole sample indicates that respondents perceived the offered scenario as realistic (M=4.61, p<0.000). More granular investigation for each group supports this finding and is presented in Appendix G. Further comparison between the eight groups did not reveal any statistically significant differences (F (7, 298) = 0.256, p=0.997) concerning scenario realism. The Dunnett's T3 post-hoc test for pairwise comparison across treatments is summarized in Table 10. We thus assume respondents from different groups perceive the scenario equally realistic.

A↓ \ B→		1	2	3	4	5	6	7	8
		M=4.64	M=4.59	M=4.77	M=4.76	M=4.48	M=4.77	M=4.4	M=4.6
1	M=4.64	-							
2	M=4.59	A=B(-0.05)	-						
3	M=4.77	A=B(0.14)	A=B(0.18)	-					
4	M=4.76	A=B(0.12)	A=B(0.17)	A=B(-0.01)	-				
5	M=4.48	A=B(-0.16)	A=B(-0.11)	A=B(-0.3)	A=B(-0.28)	-			
6	M=4.77	A=B(0.13)	A=B(0.18)	A=B(0)	A=B(0.01)	A=B(0.29)	-		
7	M=4.4	A=B(-0.24)	A=B(-0.19)	A=B(-0.37)	A=B(-0.36)	A=B(-0.08)	A=B(-0.37)	-	
8	M=4.6	A=B(-0.04)	A=B(0.01)	A=B(-0.18)	A=B(-0.16)	A=B(0.12)	A=B(-0.17)	A=B(0.2)	-

Note: Number in brackets indicates mean differences among treatment conditions, positive difference indicates that row configuration (A) is better than column configuration (B) with respect to the scenario realism and vice versa.

**-the mean difference is significant at the 0.05 level; not significant otherwise.*

Table 10. Comparison among Distinct Treatments [Dependent Variable: Scenario Realism]

To test the effects of information cues, an ANOVA was performed for each type of uncertainty. As expected, participants experienced lower uncertainty when the corresponding information

was present. In particular, when the information about the driver was on the screen, the supplier uncertainty ($M_{driver\ info=1}$=3.30, SD=1.31 vs. $M_{driver\ info=0}$ =4.97, SD=1.31; F (1, 297) = 121.37; p=0.000) was significantly lower compared to the offerings where this information was absent. Respondents who saw information about the car scored lower on resource uncertainty than those who did not ($M_{car\ info=1}$ =3.20, SD=1.2 vs. $M_{car\ info=0}$=5.21, SD=1.28; F (1, 297) = 195.91; p=0.000). Presented with the information about co-travelers, respondents reported lower levels of collaboration uncertainty as compared to cases when this type of information was absent ($M_{cotravel\ info=1}$ =3.56, SD=1.26 vs. $M_{cotravel\ info=0}$=5.39, SD=1.14; F (1, 297) = 171.96; p=0.000). For collaboration uncertainty, there was a significant interaction between information about driver and information about co-travelers (F (1,297) = 9.003, p = 0.003). When the information about co-travelers was present, information about the driver led to lower collaboration uncertainty scores (F (1,293) = 7.361, p = 0.007). In the absence of information about co-travelers, information about the driver had no effect (F (1,293) = 2.406, p =0.122).

B→ / A↓		SI=1, RI=0, CI=0	SI=0, RI=1, CI=0	SI=0, RI=0, CI=1	SI=1, RI=1, CI=0	SI=1, RI=0, CI=1	SI=0, RI=1, CI=1	SI=1, RI=1, CI=1	SI=0, RI=0, CI=0
		1	2	3	4	5	6	7	8
SI=1, RI=0, CI=0	1	-							
SI=0, RI=1, CI=0	2	A>B (1.34*)	-						
SI=0, RI=0, CI=1	3	A>B (1.77*)	A=B (0.43)	-					
SI=1, RI=1, CI=0	4	A=B (-0.05)	A>B (-1.39*)	A>B (-1.82*)	-				
SI=1, RI=0, CI=1	5	A=B (0.42)	A>B (-0.92*)	A>B (-1.35*)	A=B (0.48)	-			
SI=0, RI=1, CI=1	6	A>B (1.29*)	A=B (-0.05)	A=B (-0.48)	A>B (1.34*)	A=B (0.87)	-		
SI=1, RI=1, CI=1	7	A=B (-0.34)	A>B (-1.68*)	A>B (-2.11*)	A=B (-0.28)	A=B (-0.76)	A>B (-1.63*)	-	
SI=0, RI=0, CI=0	8	A>B (2.04*)	A=B (0.70)	A=B (0.27)	A>B (2.09*)	A>B (1.61*)	A=B (0.75)	A>B (2.37*)	-

Note: Number in brackets indicates mean differences among treatment conditions, positive difference indicates that row configuration (A) is better than column configuration (B) with respect to the supplier uncertainty and vice versa.

**-the mean difference is significant at the 0.05 level; not significant otherwise. SI- information about supplier; RI- information about resource; CI-information about co-travelers.*

Table 11. Comparison among Distinct Treatments [Dependent Variable: Supplier Uncertainty (mean)]

Since information cues are assumed to reduce ambiguity and enforce more rational decisions, the Dunnett's T3 post-hoc test was conducted to contrast the relative impact of distinct

treatments on each uncertainty type (see Table 11, Table 12, Table 13). Results indicate that in general, the presence of information about the driver significantly decreases supplier uncertainty across scenarios. However, there is one exception: Although respondents in scenario 5 where information about the driver and co-travelers was present (M=3.86, SD=1.30) experienced lower level of supplier uncertainty than those in scenario 6 (M=4.73, SD=1.46) who saw information about the car and co-travelers, this difference is recognized as statistically insignificant (Δ=0.87, p=0.26). Hypothesis 3 is hence only partially supported.

Resource uncertainty, as we observe, can be well reduced with the cues proposed in the experiment. Table 12 connotes that the presence of information about resource results in the significantly lower levels of the resource uncertainty for all treatments. Consequently, Hypothesis 4 is supported.

A↓ \ B→		SI=1, RI=0, CI=0	SI=0, RI=1, CI=0	SI=0, RI=0, CI=1	SI=1, RI=1, CI=0	SI=1, RI=0, CI=1	SI=0, RI=1, CI=1	SI=1, RI=1, CI=1	SI=0, RI=0, CI=0
		1	2	3	4	5	6	7	8
SI=1, RI=0, CI=0	1	-							
SI=0, RI=1, CI=0	2	A>B (-1.42*)	-						
SI=0, RI=0, CI=1	3	A=B (0.75)	A>B (2.16*)	-					
SI=1, RI=1, CI=0	4	A>B (-1.60*)	A=B (-0.18)	A>B (-2.34*)	-				
SI=1, RI=0, CI=1	5	A=B (0.4)	A>B (1.81*)	A=B (-0.35)	A>B (1.99*)	-			
SI=0, RI=1, CI=1	6	A>B (-1.37*)	A=B (0.04)	A>B (-2.12*)	A=B (0.23)	A>B (1.77*)	-		
SI=1, RI=1, CI=1	7	A>B (-1.67*)	A=B (-0.25)	A>B (-2.41*)	A=B (-0.07)	A>B(-2.06*)	A=B (-0.29)	-	
SI=0, RI=0, CI=0	8	A=B (0.9)	A>B (2.32*)	A=B (0.16)	A>B (2.50*)	A=B (0.51)	A>B (2.28*)	A>B (2.57*)	-

Note: Number in brackets indicates mean differences among treatment conditions, positive difference indicates that row configuration (A) is better than column configuration (B) with respect to the resource uncertainty and vice versa.
**-the mean difference is significant at the 0.05 level; not significant otherwise. SI- information about supplier; RI- information about resource; CI-information about co-travelers.*

Table 12. Comparison among Distinct Treatments [Dependent Variable: Resource Uncertainty (mean)]

There is also empirical support for the ambiguity-mitigating impact of the co-travelers-related cues. We exemplify that when the information about co-travelers is available to respondents, they feel significantly lower levels of the collaboration uncertainty. Hence, Hypothesis 5 is supported.

A↓ \ B→		SI=1, RI=0, CI=0	SI=0, RI=1, CI=0	SI=0, RI=0, CI=1	SI=1, RI=1, CI=0	SI=1, RI=0, CI=1	SI=0, RI=1, CI=1	SI=1, RI=1, CI=1	SI=0, RI=0, CI=0
		1	2	3	4	5	6	7	8
SI=1, RI=0, CI=0	1	-							
SI=0, RI=1, CI=0	2	A=B (0.08)	-						
SI=0, RI=0, CI=1	3	A>B (-1.78*)	A>B (-1.86*)	-					
SI=1, RI=1, CI=0	4	A=B (-0.02)	A=B (-0.1)	A>B (1.76*)	-				
SI=1, RI=0, CI=1	5	A>B (-1.11*)	A>B (-1.19*)	A=B (0.67)	A>B (-1.09*)	-			
SI=0, RI=1, CI=1	6	A>B (-1.86*)	A>B (-1.94*)	A=B (-0.08)	A>B (-1.84*)	A=B (0.75)	-		
SI=1, RI=1, CI=1	7	A>B (-1.50*)	A>B (-1.58*)	A=B (0.28)	A>B (-1.48*)	A=B (-0.39)	A=B (0.36)	-	
SI=0, RI=0, CI=0	8	A=B (0.49)	A=B (0.41)	A>B (2.27*)	A=B (0.51)	A>B (1.60*)	A>B (2.35*)	A>B (1.99*)	-

Note: Number in brackets indicates mean differences among treatment conditions, positive difference indicates that row configuration (A) is better than column configuration (B) with respect to the collaboration uncertainty and vice versa.
**-the mean difference is significant at the 0.05 level; not significant otherwise. SI- information about supplier; RI- information about resource; CI-information about co-travelers.*

Table 13. Comparison among Distinct Treatments [Dependent Variable: Collaboration Uncertainty (mean)]

Together, this suggests that uncertainty, although inherently present in sharing transactions, can be successfully reduced with the help of information cues.

We now proceed with the evaluation of the Structural Model conducted with the SmartPLS 3.0 software (Ringle et al., 2015). To investigate the hypothesized relationships, a bootstrapping with 5000 iterations was employed. Table 14 presents the analytical results of the structural model: the standardized path coefficients together with the corresponding p-values.

First, to test the distinction between resource (H1), collaboration (H2) and supplier uncertainty, we examined if the two variables (1) factor independently, (2) coexist without acting in the same way, and (3) have different relationships with other variables. Factor analysis in partial least squares showed that three types of uncertainty are discriminant with distinct loadings (Appendix J, Table J2). Moreover, the correlation between the supplier and resource uncertainty measured with Spearman's rho is rather modest ($r_{(SU;RU)}$= 0.562), the association between supplier uncertainty and collaboration uncertainty is weak ($r_{(SU;CU)}$=0.395). Finally, the three variables are different in their effect on willingness to accept. These tests demonstrate that

product uncertainty and collaboration uncertainty are distinct from supplier uncertainty, supporting H1 and H2. However, as shown in Figure 6, supplier uncertainty is positively related to resource uncertainty ($\beta = 0.57$, $p<0.000$) and explains 35.7% of its variance. In line with H1, we observe that supplier and resource uncertainties are distinct, albeit mutually related constructs. As for collaboration uncertainty, the same pattern is evidenced: the supplier uncertainty is also positively associated with collaboration uncertainty ($\beta = 0.401$, $p<0.000$). This further supports H2.

	Willingness to accept		**Price premium**		**Resource uncertainty**		**Collaboration uncertainty**	
R^2	**56.8%**		**12.7%**		**35.7%**		**17.9%**	
Hypothesized relationship	Path coeff.	p-value	Path coeff.	p-value	Path coeff.	p-value	Path coeff.	p-value
Supplier uncertainty	**-0.398**	**0.000**	**-0.163**	**0.024**	**0.570**	**0.000**	**0.401**	**0.000**
Resource uncertainty	-0.094	0.075	**-0.143**	**0.041**				
Collaboration uncertainty	**-0.174**	**0.001**	0.001	0.985				
Controls								
Age	**-0.111**	**0.008**	-0.057	0.354				
Frequency	-0.008	0.886	0.044	0.290				
Gender	-0.045	0.303	-0.006	0.914				
Income	-0.008	0.833	-0.016	0.819				
Trust to people	**0.152**	**0.003**	0.054	0.476				
Trust to platform	-0.029	0.703	-0.007	0.887				
Usefulness	**0.241**	**0.000**	**0.157**	**0.025**				

Table 14. Analytical Results of Structural Model: Effects on Willingness to Accept and Price Premiums

Concerning the consequences of uncertainty, we observe interesting relationships between different uncertainty types and the critical outcomes of the sharing transactions. As such, we notice that supplier uncertainty is negatively related to the willingness to accept the offer ($\beta = -0.397$, $p<0.000$), supporting H6a. For H7a, it was predicted that ambiguity about the resource would be negatively related to willingness to accept the offer. Contrary to our expectations, the results do not support this hypothesis at the conventional 0.05 significance level ($\beta = -0.094$, $p=0.075$). We further contemplate that collaboration uncertainty is negatively linked to the willingness to accept ($\beta = -0.174$, $p=0.001$) supporting H8a. The assessment of statistical differences between parameter estimates (Rodríguez-Entrena et al. 2018) corroborates that the effect of supplier uncertainty is higher than of collaboration uncertainty ($t=-2.49$, $p < 0.00001$). We thus assert that doubts about the supplier and collaboration are critical for consumers in their decision whether to engage in a sharing transaction. At the same time, uncertainty about the asset does not significantly influence the choice.

There is also empirical support for the negative impact of uncertainty on price premiums. Facing supplier uncertainty, consumers are willing to pay less for a sharing opportunity

compared to the average price (H6b, β =-0.163, p=0.024). Moreover, a monetary bonus is significantly associated with resource uncertainty users experience (β =-0.143, p=0.041), thus confirming H7b. Interestingly, there is no empirical support for the hypothesized impact of collaboration uncertainty (H8b, β =-0.001, p=0.985): consumers neither penalize if they are unsure about sharing experience nor willing to pay extra if the information is available.

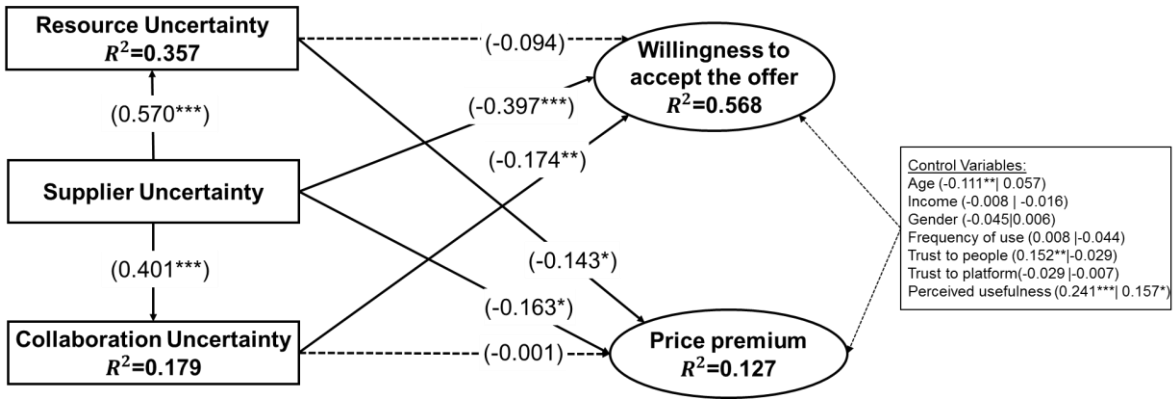

Figure 6. Results of the Structural Model

***p<0.05, **p<0.01, ***p<0.001, not significant otherwise.**

Finally, we incorporated a series of control variables to decrease the unexplained variance and consider alternative explanations. In particular, we controlled for potential confounds that could be imputed to demographical (i.e. age, gender and income), experiential (i.e. frequency of use), functional (perceived usefulness of the platform) and personal (i.e. trust in people and trust in platform) variations. We observe a significant link between age and willingness to accept an offer (β =-0.111, p=0.008), with younger people being more ready to share. Consumers with higher propensity to trust others are naturally more inclined towards sharing (β =0.152, p=0.003). Perception of practical benefits is associated with both consumer engagement (β =-0.241, p<0.000) and price premium (β =0.157, p=0.025).

Our model explains 56.8% of the variance in the dependent variable "willingness to accept an offer" and 12.7% in the construct "price premium." Effect sizes (f^2) for the impact of uncertainty on willingness to accept an offer was medium for supplier uncertainty (f^2_{SU}=0.24) and small for collaboration uncertainty (f^2_{CU}=0.05). The effect size for the impact of uncertainty on price premium (f^2_{SU}=0.02; f^2_{RU}=0.01) is small as well. Considering many control variables, these effect sizes could have been foreseen. The model also accounts for 37.5% of the variance for resource uncertainty and for 17.9% of variance for collaboration uncertainty. We detected a large effect size for the impact of supplier uncertainty on resource uncertainty ($f^2_{SU\rightarrow RU}$=0.56) and a moderate effect on collaboration uncertainty ($f^2_{SU\rightarrow CU}$=0.22).

As a robustness check, we conducted logistic regression using a binary variable that represents a strong preference for acceptance or rejection of the sharing offer. For price premium, an OLS regression was run. The alternative model specifications confirm the results (Appendix K).

We also performed a mediation analysis to assess the effects of information cues on the critical outcomes of the sharing transaction via uncertainty. Results of the bootstrapping approach (Preacher and Hayes, 2008; Zhao et al., 2010) indicate a partial mediation for the path from supplier-related cues and collaboration-related cues to a willingness to accept via the corresponding uncertainty type. Next, a partial mediation for the path from supplier-related cues to price premium via the supplier uncertainty was unveiled. An indirect-only mediation was found for the path from resource-related cues to price premium via the resource uncertainty. No mediating relationship could be discerned for the paths from collaboration-related cues via uncertainty to price premium. A full overview of the results from the mediation analysis is given in Appendix L.

#	Hypothesized Relationship	Support	Comment
H1	Supplier uncertainty → Resource uncertainty	Supported	Supplier uncertainty magnifies resource uncertainty
H2	Supplier uncertainty → Collaboration uncertainty	Supported	Supplier uncertainty magnifies collaboration uncertainty
H3	Supplier-related cues → Supplier Uncertainty	Supported	Supplier uncertainty can be successfully mitigated with the help of relevant information cues
H4	Resource-related cues → Resource Uncertainty	Supported	Resource uncertainty can be successfully mitigated with the help of relevant information cues
H5	Collaboration-related cues → Collaboration Uncertainty	Supported	Collaboration uncertainty can be successfully mitigated with the help of relevant information cues
H6a	Supplier uncertainty → Willingness to accept	Supported	Supplier uncertainty has a deteriorating effect on consumer decision to accept a sharing offer
H7a	Resource uncertainty → Willingness to accept	Rejected	Resource uncertainty has no significant impact on consumer decision to accept a sharing offer
H8a	Collaboration uncertainty→ Willingness to accept	Supported	Collaboration uncertainty has a deteriorating effect on consumer decision to accept a sharing offer
H6b	Supplier uncertainty → Price premium	Supported	Supplier uncertainty has a detrimental effect on price premium
H7b	Resource uncertainty → Price premium	Supported	Resource uncertainty has a detrimental effect on price premium
H8b	Collaboration uncertainty→ Price premium	Rejected	Collaboration uncertainty has no impact on price premium

Table 15. Overview of Hypotheses Testing

In total, our study substantiates nine of eleven hypotheses while declining two others. An overview of our hypotheses testing is summarized in Table 15. The implications of the obtained results are discussed in the following sections.

3.4 Discussion Of Results And Managerial Implications

3.4.1 Key Findings

Despite the advantages offered by "unlocking the value inherent in sharing spare resources" (Malhotra and Van Alstyne 2014, p.24), consumption in the sharing economy is plagued by difficulties in predicting the quality of offerings. By constructing and validating a research model that expounds the uncertainties which consumers are exposed to in sharing transactions and links them to the critical outcomes of an online deal, findings from this study raise several points of interest.

First, contextualizing the understanding of uncertainty in sharing environments helps to understand consumers' evaluations and choices better. Acknowledging the commonalities with e-commerce and access-based platforms, we anticipated that consumers also face supplier uncertainty, which reflects their hesitation about the true characteristics of the supplier, and resource uncertainty, which encapsulates their doubts about the attributes of the asset to be shared. At the same time, we demonstrated that the unique contextual characteristics of sharing arrangements (e.g. the absence of ownership transfer and the intense interaction between parties) (Bardhi and Eckhardt 2012) are likely to transform the nature of uncertainties confronting participants in the sharing economy. Therefore, this paper demonstrates that sharing arrangements are characterized by a unique type of uncertainty - collaboration uncertainty. We conceptualized collaboration uncertainty as a distinct construct, although related to supplier uncertainty. Extending the framework for the e-commerce domain, we proposed a threefold model of uncertainty for sharing transactions.

Second, we discovered that a consumer's uncertainty drives the most critical outcomes of a sharing deal. Collaboration uncertainty, together with supplier uncertainty, significantly influences the willingness to accept an offer. To our surprise, we did not find a significant impact of resource uncertainty on consumer decisions. This finding suggests that the value of the resource in sharing transactions is overshadowed by supplier and collaborators. The concerns of potential users mainly center on the factors related to the competences of a resource owner (driver or host) to guarantee that sharing takes place and interaction to ensure positive sharing experience. Concerning price premiums, we observed users' eagerness to pay less when they experience supplier or resource uncertainty, while collaboration uncertainty does not necessarily yield a significant penalty. This implies that while users perceive collaboration

uncertainty to be crucial when deciding to engage in sharing, they do not assign monetary value to it.

Third, we examined the interrelation between the theorized uncertainty types. Specifically, our model suggests that resource uncertainty is perceived as a distinct construct. However, it is driven by supplier uncertainty. In line with previous findings in the e-commerce context (Dimoka et al. 2012), our study asserts that the relationship holds within the sharing domain. The novel collaboration uncertainty is discerned to be different from, albeit affected by, supplier uncertainty.

Finally, our findings yield insights into the value of information cues as an efficient remedy against ambiguity on sharing platforms. We demonstrated that consumers assess available information cues and use them to mitigate the uncertainty of a sharing offer. In line with information asymmetry theory (Akerlof 1970; Spence 1973; Stiglitz 1976), users rely on supplier-related reports and verifications to decrease supplier uncertainty. Resource-related descriptions lower resource uncertainty. Provided with the details about the co-sharers, consumers exhibited lower levels of collaboration uncertainty.

3.4.2 Theoretical Implications

This study examined uncertainty in sharing arrangements as it guides online consumers' behavior. Since prior research treats sharing transactions identical to e-commerce, this study is the first to advocate unique features that distinguish sharing deals from other forms of multi-sided marketplaces. In particular, we discovered that sharing transactions are conducted without a transfer of ownership, as opposed to online purchases, and imply joint consumption, in contrast to assess-based deals. These singularities alter the nature of uncertainty experienced by consumers and are taken into account when forming their preference in sharing environments. In light of this, this study contributes to theory on the following points.

First, we advance the diagnostic research stream by developing an uncertainty model exclusive to sharing transactions. In doing so, we not only identify supplier, resource and collaboration uncertainty as major obstacles determining consumers' willingness to accept a sharing offer, but we also provide specific reasons for this conceptualization which was previously neglected by past research. Specifically, we delineate a sharing platform as a unique marketplace that facilitates joint consumption and does not require the ownership transfer. These peculiarities motivated us to theorize uncertainty, which has been treated by scholars to be a two-dimensional (seller and product) determinant of consumers' preferences, as a three-faceted

construct. Apart from supplier and resource uncertainty, adopted from e-commerce research, we assume collaboration uncertainty as a predictor of consumers' engagement and price premiums. In subscribing to a finer-grained theorization of uncertainty, we extend previous work by illuminating that not all uncertainty dimensions are equally instrumental in shaping consumer preferences. Apart from reinforcing prior research by attesting to the impact of supplier and resource uncertainty on the critical outcomes of an online deal (e.g., Chatterjee and Datta 2008; Dimoka and Pavlou 2008; Dimoka et al. 2012; Luo et al. 2012), our findings also testify to the significance of collaboration uncertainty as a new uncertainty dimension that consumers encounter on sharing platforms. Checking how ambiguity affects both willingness to accept and price premiums allows us to gain an in-depth appreciation of consumers' interactions with digital sharing channels. For instance, our findings indicate that supplier uncertainty and collaboration uncertainty significantly reduce willingness to accept an offer, while resource uncertainty matters little in this setting. Likewise, our empirical evidence suggests that price premiums are determined by supplier and resource uncertainty, whereas collaboration uncertainty has no significant effect on a monetary bonus.

Second, we enrich the prescriptive research by illustrating how each uncertainty type can be mitigated with the relevant information cues on sharing platforms. To date, the prescriptive research stream has mainly tested the direct effect of cues on the transaction outcome (e.g., Benlian and Hess 2011; Li et al. 2009) or investigated issues of uncertainty in the e-commerce domain (e.g., Chatterjee and Datta 2008; Dimoka and Pavlou 2008; Huang et al. 2005; Luo et al. 2012). In this sense, our findings supplement past studies on the signaling mechanisms by shedding light on how information cues can lead to improved outcomes through uncertainty reduction. By contrasting distinct performance outcomes of sharing transaction (i.e. willingness to accept and price premiums), we draw a sophisticated picture of uncertainty in the sharing context. For instance, our model reveals that supplier-related cues and collaboration-related cues may reduce uncertainty and induce participation, while resource-related cues are of minor importance. Nevertheless, resource-related cues, together with supplier-related cues, seem to have the potential to generate price premiums. Table 16 summarizes the study contributions.

Contribution	State of Literature	Relevance	
		Theory	Empirics
Extends the understanding of the sharing economy by justifying its peculiarities rooted in the absence of ownership transfer and joint consumption which implies intensive interaction between parties.	Prior research generally tries to explain consumer behavior in sharing arrangements with insights from the e-commerce (Hawlitschek et al., 2016) or service literature (Frey et al. 2018), thus neglecting the singularity of sharing.	✓	
Advances the understanding of sharing economy mechanisms by showing that the singularities alter the nature of uncertainty experienced by consumers, adding a new dimension of collaboration uncertainty.	Prior research highlights the need to investigate uncertainty in sharing encounters (Ferrari 2016), with most works of a theoretical nature or targeting only a single component like seller (Lei et al. 2018) or service quality (Frey et al. 2018).	✓	✓
Reinforces past studies by attesting to the impact of supplier uncertainty on willingness to transact and price premiums. Testifies to the significance of collaboration uncertainty in shaping consumer engagement together with marginal importance of resource uncertainty.	Prior research focused on the impact of seller and product uncertainty on the critical outcomes of an online deal (e.g., Chatterjee and Datta 2008; Dimoka and Pavlou 2008; Dimoka et al. 2012; Luo et al. 2012)	✓	✓
Supplements past investigations on the signaling mechanisms by shedding light on how information cues can lead to improved outcomes through uncertainty reduction.	Prior research has mainly tested the direct effect of cues on the transaction outcome (e.g., Benlian and Hess 2011; Li et al. 2009) or investigated consequences of uncertainty in e-commerce domain (e.g., Chatterjee and Datta 2008; Dimoka and Pavlou 2008; Huang et al. 2005; Luo et al. 2012).	✓	✓

Table 16. Summary of Study Contributions

3.4.3 Practical Implications

This study has implications for sharing platform providers and participants of sharing transactions. Following our findings, to attract consumers, sharing platforms should rely on information cues to mitigate information asymmetries across three domains of uncertainty. Our results underline that collaboration uncertainty, together with supplier uncertainty, represents a substantial barrier to consumer engagement. Here, cues that inform about supplier competencies (e.g. driving/hosting style, experience) and identity (e.g. verified personality) emerge as particularly useful. Moreover, the presence of information about the sharing companions (e.g. who they are, their interests and preferences, level of sociability), which reduces collaboration uncertainty, also significantly increases consumers' willingness to transact. Making use of this signaling mechanism is especially advisable for platforms which aim to ensure the highest possible acceptance rates.

Further, our findings inform sharing platforms on how to optimally adjust their configuration of information cue mechanisms to bolster consumption behavior. Indeed, sharing platforms, as two-sided markets, primarily profit from charging transaction fees for their matching function and, as a consequence, are interested in the growth of their transaction volume (Armstrong 2006). Since consumers are ready to pay extra for offerings that incorporate information about

supplier credibility and detailed resource description, sharing platforms can seek to monetize this knowledge by introducing a broader palette of uncertainty mitigating signals.

Finally, from the study's controls, since perceived usefulness has a positive effect on willingness to accept an offer and price premiums, platform providers are advised to enhance the functionality of their products in terms of convenience and potential utilitarian benefits to the target audience. The negative impact of age on engagement in sharing transaction confirms that young adults report more considerable excitement after trying sharing services and prefer experiences over "things" (PWC 2015). As such, more efforts should be made to increase the popularity of the sharing services across the older population.

3.4.4 Limitations and Future Research

The current study has several limitations that offer promising opportunities for future research. First, findings from our experimental study are centered on the ridesharing. We based our choice on the fact that the accomplishments of the sharing economy are particularly remarkable in this area. However, other industries like accommodation sharing could be further explored to ensure the validity of the results across contexts.

Second, future research should address the issue of duration of sharing as a potential uncertainty amplifier, since uncertainty perceptions and their implications may depend on the time span. For example, traveling a long distance or staying for several nights implies more prolonged and more intensive interaction. For a choice with so much at stake, consumers may want to minimize the risk of unpleasant collaboration. At the same time, for a one-hour city-to-city trip, people may prefer to glance at the offer, make a quick choice, and be ready to compromise more. We therefore expect that higher duration of sharing could potentially magnify consumers' concerns about uncertainty, especially about collaboration.

Third, this study is focused on sharing transactions that assume intense interaction between parties and are based on employing underutilized private assets. We are aware that over time, sharing platforms (e.g. Uber, Lyft, Airbnb), chasing profits, attracted more professionals and ultimately transmogrified into portals with different types of transactions, while still allowing for the original ridesharing or room sharing. For example, Airbnb originally started as a marketplace where local hosts provided "air bed and breakfast" with authentic hospitality to travelers. The concept of turning extra space into an asset for additional income (Bloomberg.com 2015), thus bypassing the registration of a sole proprietorship and consequential taxes, also appealed to go-getters who buy a spare apartment to rent it out as well

as to professional real estate investors and hotels (Attorney General 2014; CBRE 2017; Li et al. 2016; Süddeutsche Zeitung 2017). Despite the platform's expansion through professional landlords and a recently announced partnership with B&Bs and boutique hotels (Airbnb 2018) for those who prefer traditional-style lodging, the data supports the official Airbnb line that the majority of users are still "average Joes." To them, "one of the main ingredients is a one to one hospitality experience where there's a host involved" as declared by Airbnb's Australia and New Zealand country manager Sam McDonagh (shorttermrentalz.com 2018).

Finally, the majority of the respondents in our sample for both focus groups and experimental study have spent most of their life in Europe. We expect our main findings to hold across countries since uncertainty is an inalienable component of economic activity (Beckert and Berghoff 2013). However, a cross-cultural study may reveal differences in the importance that users from different cultures attach to various uncertainty types and corresponding information cues.

3.4.5 Concluding Remarks

Building on the asymmetric information theory (Akerlof 1970, Pavlou et al. 2006), this study explored uncertainty in the sharing economy by taking into consideration unique contextual characteristics of sharing arrangements. In addition to the notions of resource and supplier uncertainty which were adopted from extant literature on e-commerce (e.g., Chatterjee and Datta 2008; Dimoka et al. 2012; Luo et al. 2012), we uncovered collaboration uncertainty as a new information asymmetry problem faced by consumers of the sharing transaction. By manipulating relevant information cues, we experimentally illustrated that only two types of uncertainty (supplier and collaboration) translate into negative consumer engagement and lower price premiums. The effect of resource uncertainty is shown to be insignificant. The provision of information related to supplier and collaborators, respectively, reduces uncertainty and consequently drives willingness to accept an offer as well as willingness to pay for shared services. Having conceptualized and measured collaboration uncertainty as a distinct construct relevant for sharing transactions, this study aimed at encouraging IS researchers to focus on reducing collaboration uncertainty in sharing contexts with IT-enabled solutions. On the managerial level, by identifying this new locus of uncertainty, the present findings may help sharing platform providers to assist their consumers in making informed decisions.

4 Paper B: How Much Will You Pay? Understanding the Value of Information Cues in the Sharing Economy

Title

How Much Will You Pay? Understanding the Value of Information Cues in the Sharing Economy

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Abstract

The advent of peer-to-peer accommodation sharing platforms, like Airbnb, has ushered in a new era in travel worldwide. However, to ensure sustainability in the long term, information asymmetry inherent to such platforms has to be tackled. Currently, accommodation sharing platforms offer a multitude of in-built trust-enhancing cues that may reduce information asymmetry, signal trust and aid potential guests in their decision making. Nevertheless, little is known about the effectiveness of these cues in shaping online consumption behavior. Building on the Signaling Theory, this study explores the effectiveness and monetary value of three groups of trust-enhancing cues commonly deployed by service providers to promote trust in the sharing economy via a discrete choice experiment methodology. Findings from our study not only contribute to extant literature on the effectiveness of trust-enhancing cues, but they also empower platform providers and hosts through novel insights on how the performance of their offerings is evaluated by consumers.

Keywords

Sharing Economy, Trust-Enhancing Signals, Price Premium, Discrete Choice Experiment

4.1 Introduction

The advent of the new "sharing economy" has revolutionized consumption habits. Platforms, which facilitate peer-to-peer sharing of housing (e.g., Airbnb, 9flats), cars and drivers (e.g., UBER) and parking places (e.g., ParkatmyHouse), have witnessed stunning growth given that consumers can now enjoy the benefits of possession without the responsibility of ownership. These developments have been particularly transformative for the hospitality industry with platforms, like Airbnb, claiming a major share of a market that is traditionally dominated by commercial establishments. Beyond cost savings for tenants, accommodation sharing affords a level of home-like hospitality that is generally unavailable from such establishments. In turn, accommodation sharing has brought about discernible economic benefits, with Airbnb guests staying longer than those staying in commercial establishments, and also spending 2.1 times more (Airbnb 2016a).

Despite the optimism surrounding the sharing economy, critics have called into question the risks of this growing phenomenon (Baker 2014). Detractors of accommodation sharing have often cited issues such as money scams, unsatisfactory hygiene, noise and even harassment (e.g., airbnbhell.com 2016; sitejabber.com 2016). Indeed, while commercial establishments are subjected to stringent regulations with regards to their cleanliness and service, private hosts do not have to comply with such stipulations. Coupled with the fact that guests are typically not furnished with the exact identity of the host and the location of the apartment before concluding a transaction, inherent information asymmetries imply that guests must make choices under conditions of uncertainty. Consequently, reducing uncertainty and promoting trust between hosts and guests is critical for any provider operating in the peer-to-peer accommodation sharing space.

Trust is often touted as the invisible 'currency' powering the sharing economy as it underlies consumer choices and enables transactions (Botsman 2012; Edelman and Luca 2014). Consequently, platforms, like Airbnb, have dedicated prominent sections on their sites to draw attention to the importance of trust for their consumer community and to offer commensurable remedies whenever this trust is broken (see Airbnb 2016b). For example, a USD $1 million insurance is offered by Airbnb to protect hosts from unexpected damage to their property. For potential guests, Airbnb contains *trust-enhancing cues* (or *signals*) to aid them in making informed decisions. Feedback systems featuring opinionated reviews, star ratings and peer references translates into insightful signals that can be harnessed by potential guests to compare offerings (Chatterjee 2001; McKnight et al. 2002a; 2002b).

Prior research has introduced *cue-based trust* as a concept that contrasts with experience-based trust (Wang et al 2004). While certain cue have been discovered to be critical in enhancing trust which in turn positively influences behavioural outcomes in retail (Wang et al 2004) or peer-to-peer sharing networks (Zervas et al. 2015; Möhlmann 2016), little is known about their individual effectiveness. Amid a diversity of cues, which are the ones determining guests' final decision and how do they differ in their relative impact? Are guests ready to pay more for an accommodation if a specific cue is provided, and if so, by how much? In other words, what is the price premium for trust on these platforms? To answer these questions, we build on the Signalling Theory and employ a Discrete Choice Experiment methodology to explore the effects of three groups of trust-enhancing signals in the peer-to-peer accommodation sharing context. In doing so, we are able to differentiate among distinct influences produced by discrete trust-enhancing cues and derive a monetary value for each of these cues as evaluated by consumers.

From a theoretical standpoint, our study contributes to extant literature on the effectiveness of trust-enhancing cues in online settings (Wang et al 2004; Wells et al. 2011; Zervas et al. 2015; Möhlmann 2016). To the best of our knowledge, this study is the first to ascertain monetary valuation for distinguishable levels of trust-enhancing cues. In addition, our empirical findings may enrich existing research on how consumers interact with trust-enhancing cues in the context of the sharing economy. On the practical front, platform providers and hosts may leverage on the results of our study to infer cues for which they should emphasize when designing their offerings.

4.2 Theoretical Background

4.2.1 Understanding the Need for Trust-Enhancing Signals

Information asymmetry is intrinsic to economic transactions because sellers typically possess more information about the quality of their offerings than buyers (Ba and Pavlou 2002). Due to these imbalances, sellers are enticed to engage in opportunistic behaviour (Williamson 1975) such as incomplete disclosure, "*taking shortcuts, breaking promises, masking inadequate or poor quality work*" (Provan and Skinner 1989, p. 203). However, since markets vary (i.e., both high- and low-quality goods are traded), not all agents behave opportunistically (Knorringa 1994). This translates into an acute problem of distinguishing honest agents from their opportunistic counterparts. To tackle this, buyers may attempt to assess the trustworthiness of

the potential partner as a means of resolving the adverse selection problem (Williamson 1975; Akerlof 1970). Defined as perceptions formed by consumers on the basis of "*cues received from an initial encounter* [and encapsulating their beliefs about the extent to which their] *vulnerabilities will not be exploited"* (Wang et al. 2004, p. 54), trust emerges as a focal concept facilitating decision-making and transactions online (Ba and Pavlou 2002).

Since the ability to assess the trustworthiness of the other party online is often limited, consumers are likely to resort to peripheral cues to guide them in their cognitive assessment process (Chaiken 1980). This suggests a paramount role of trust-enhancing cues under conditions of uncertainty (Petty and Cacioppo 2012). Signalling Theory thus emerges as an appropriate theoretical lens for explaining how information asymmetries can be mitigated via the provision of pertinent trust-enhancing cues (Spence 1973; Akerlof 1970). Specifically, effective cues – those that are costly, observable and verifiable – are found to be invaluable in assisting outsiders to tell apart a high-quality offering from a low-quality one (Connelly et al. 2011; Li et al. 2009). Having received a signal, a recipient is expected to adjust his/her attitude and behaviour accordingly, which can take the form of increased willingness to transact and pay a price premium for an offering (Coff 2002).

4.2.2 Trust-Enhancing Signals in the Accommodation Sharing Context

While popular accommodation sharing platforms, like Airbnb, share commonalities with traditional e-commerce platforms, they also exhibit unique contextual characteristics that may alter the nature of uncertainties inherent to sharing arrangements. First, the sharing economy does not involve the transfer of ownership, but rather, accentuates the joint consumption of shared resource. This implies greater intensity of interaction between parties over the consumption duration (Bardhi and Eckhardt 2012). Second, sharing platforms focus on the provision of services, rather than goods (Knote and Blohm 2016). Here, unique characteristics of services (e.g., intangibility, heterogeneity, inseparability of production and consumption) have far-reaching implications for quality judgements. Third, the quality of shared services is largely unregulated (Sundararajan 2014), which may fuel consumer uncertainty. Acknowledging these peculiarities, platform providers, like Airbnb, introduce an elaborate set of verifiable trust-enhancing cues that supposedly reduce uncertainty for guests. The introduction of such cues also supplies hosts with a workable framework for reducing guest uncertainty towards their offerings. Broadly, trust-enhancing cues on accommodation sharing platforms can be clustered into *three* separate groups: (1) *feedback system*; (2) cues derived

from a *social graph* articulated by an online user, and; (3) validated linkages between online and offline identities of the host - *offline verifications and telepresence* (Table 1).

Trust-Enhancing Cues / P2P Platform	Feedback System			Social Graph			Offline Verification and Telepresence							
	Reviews	*Ratings*	*References*	*Facebook*	*LinkedIn*	*Google+*	*Photo of a host*	*Verified ID*	*Verified photo of apartment*	*About me*	*Response rate*	*Response time*	*Calendar update*	*Membership duration*
Paid accommodation sharing services														
Airbnb	x	x	x	x	x	x	x	phone, e-mail, offline ID	x	x	x	x		x
Homeaway	x	x					x	phone open		x	x	x	x	x
VRBO	x	x						phone open, e-mail			x	x	x	x
Flipkey	x	x					x	phone open		x	x	x	x	
Roomorama	x	x					x	certified host		x	x	x	x	x
Wimdu	x	x					x			x	x	x	x	
9flats	x	x		inner SNS			x	verified host	x	x	x	x		
HouseTrip	x	x					x				x	x		x
Homestay	x	x					x			x	x	x		x

Table 17. Common trust-enhancing cues for paid accommodation sharing platforms

The effectiveness of *feedback systems* (1) is rooted in their ability to restrain undesirable behaviour by imposing costs on opportunistic vendors in terms of future lost profits (Ba and Pavlou 2002). Cues, such as reviews, recommendations and star ratings have been routinely associated with trust and sales in the e-commerce context (e.g., Zervas et al. 2015; Chen et al. 2004). For example, Ba and Pavlou (2002) note that positive ratings have the potential to mitigate information asymmetries, culminating in a price premium for sellers. The impact of these cues is especially pronounced in the hospitality industry (Ye et al. 2011; Liu 2006). For example, 35% of guests switch their choice of hotels after reading online reviews (World Travel Market Industry Report 2010). Many sharing platforms have thus incorporated feedback elements. Airbnb encourages hosts and guests to rate the other party upon the completion of the transaction (Edelman and Luca 2014). Yet, the effectiveness of these mechanisms has been questioned in the context of the sharing economy (Zervas et al. 2015). The reasons are three-fold. First, stakeholders accuse Airbnb of removing negative reviews, thereby eroding the ability of potential guests to arrive at an objective opinion (e.g. Schaal 2012). Second, until recently, guests and hosts could see mutual reviews beforehand, breeding fears of retaliation and suppressing honest opinions (e.g., Weber 2014; The BnB Life 2013). Third, individuals appear reluctant to criticize others (e.g. hosts) online even if their experience was unsatisfactory

(e.g., Zervas et al. 2015). Together, these flaws may undermine the credibility of the feedback system, calling for a need to revisit its effectiveness in the context of sharing economy.

Cues based on online social graph (2) represent another group of signals with trust-enhancing properties. In the sharing context, both external (e.g., Facebook for Airbnb) and internal social networks can be leveraged in unison. For example, social networks disclosed online can be employed to establish a connection – often in the form of common ground – between a guest, a host, and a specific offering. The effectiveness of this approach can be traced back to the principle of homophily, which holds that similarity between partners, in terms of demographics or viewpoints, promotes trusting relationships (Ibarra 1993; McPherson et al. 2001). For instance, Airbnb not only allows users to search for accommodations offered by their Facebook friends, but it also notifies a user when a friend has reviewed an offering. Potential guests are also informed when the host has attended the same university. Furthermore, measures related to individual social graph structure can be utilized to verify of his or her online identity and draw further inferences (Staiano et al. 2012; Airbnb 2016b). For example, Airbnb communicates how many Facebook friends a host has. Nonetheless, prior research has remained divided on the effectiveness of this trust-enhancing cue (Tong et al. 2008). On one hand, a high number of friends on a Social Networking Site not only signals that a profile is unlikely to be fabricated, but it also has been associated with positive perceptions of the profiler such as popularity (Utz 2010), pleasantness, confidence and heterosexual appeal (Kleck et al. 2007). On the other hand, past studies have reported that individuals with very large networks were deemed to be less socially attractive (Tong et al. 2008), promiscuous and hence, not trustworthy (Westlake 2008; Donath and Boyd 2004). While there is only a limited body of empirical research that yields insight into the effectiveness of trust-enhancing cues grounded in social graph, the increasing reliance on such cues in the sharing context calls for a better appreciation of their effectiveness.

Finally, online buyers may question the existence of the other party or the credibility of its reputation offline. This highlights the necessity for (3) "*offline verifications and telepresence*" cues. Looking for ways to deal with fraudulent agents, many sharing platforms establish their own in-house verification services. For example, Airbnb offers to authenticate the identification documents of its users. Such authentication could signal that the other party is real and its reputation history has not been distorted (e.g., by simply changing an e-mail address) (Ba et al. 2003). Further, hosts may apply to Airbnb to validate their apartment photos to ensure higher credibility (Airbnb 2016c). Though these signals cooperate to bridge offline and online

presence of market participants, their effectiveness in the sharing context is unclear. Prior research also does not yield a unified picture: while some studies revealed a positive impact of trust-enhancing seals granted by an independent third party (Xu et al. 2012; Yang et al. 2006), others find no evidence for these effects (e.g., Hui et al. 2007; McKnight et al. 2004). This in turn calls for better understanding of the effectiveness of such cues for the sharing context. Figure 7 presents the conceptual framework of our study.

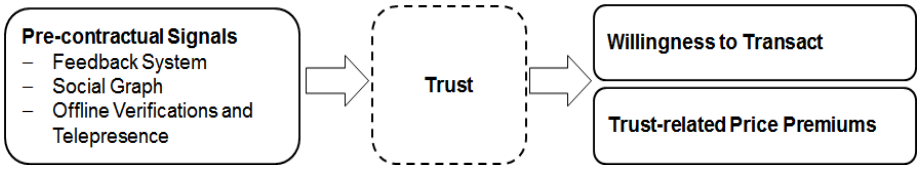

Figure 7. Conceptual framework for the study

4.3 Methodology

To derive the value of discrete trust-enhancing cues in accommodation sharing settings, a Discrete Choice Experiment (DCE) was conducted. The DCE approach is founded on a combination of two elements: (1) *discrete choice analysis* to model preferences, and; (2) *stated preference methods* to gather the required data for eliciting these preferences (Viney et al. 2002; Kjær 2005; Street and Burgess 2007). *Stated preference methods* allow consumer preferences to be specified in hypothetical, but 'close to the truth' scenarios, thereby helping to tease apart the influence exerted by discrete attributes in the choices made by respondents and their valuation of these attributes. This is especially attractive when real choices are difficult to observe. We thus favour the DCE approach over other conjoint techniques that are purely mathematical and are criticized for being inconsistent with a long-standing economic demand theory (Louviere et al., 2010). Underlying DCE, *discrete choice analysis* is rooted in the Random Utility Theory (RUT) (e.g., Manski 1977; McFadden 1974), which considers a rational individual i who makes choices between a number of J alternatives in a consistent manner and in accordance with the utility maximization principle. Grounded in the assumption that a researcher lacks information about the true utility function of i, RUT differentiates between the observable systematic component V_{ij} and a random component ε_{ij} that incorporates all unobservable factors of consumer's choice:

$$U_{ij} = V_{ij} + \varepsilon_{ij} \quad (1).$$

Hence, the probability that a specific alternative j is chosen can be estimated as:

$$p_i(j/J) = Prob(U_{ij} > U_{ik}) = Prob[(V_{ij} + \varepsilon_{ij}) > (V_{ik} + \varepsilon_{ik})] =$$
$$= Prob[(V_{ij} - V_{ik}) > (\varepsilon_{ij} - \varepsilon_{ik})] \; \forall \; j \neq k, k \in J \quad (2).$$

Additionally, consistent with Lancaster's (1966) economic theory of value, DCE treats goods as a bundle of attributes since "*these characteristics give rise to utility, not goods themselves, on which the consumer's preferences are exercised*" (p. 134). Therefore, the observable utility of a good (specific alternative *j*) is the sum of the utilities of its individual attributes:

$$V_{ij} = \beta x_{ij} = \sum_m \beta_m x_{mji} \rightarrow U_{ij} = \beta x_{ij} + \varepsilon_{ij} \quad (3),$$

where x_{ij} is a vector of m attributes related to the alternative j, and β represents vector parameters of corresponding attributes. The output of the model is the estimated discrepancy in utilities among alternatives caused by difference in utilities for each attribute. Since probabilities and estimated utility scores are numeric values, it is possible to estimate a marginal rate of substitution (MRS), which can be interpreted as consumers' willingness-to-pay (WTP) for a change in the level of an attribute assuming that the vector of attributes includes costs (Kjær 2005). Taken together, by analysing the choices of respondents across selected sets of alternatives, DCE enables the identification of the importance and monetary value of considered attributes, thereby rendering it a suitable tool for our study.

4.3.1 Model Specification

The DCE approach involves three key stages: (1) model specification; (2) experimental design, and; (3) questionnaire development (Rose and Bliemer 2008; Johnson et al. 2013). To determine the impact of discrete cues on users' willingness to engage in a transaction, a hypothetical scenario of choosing an accommodation in Milan via a fictional peer-to-peer platform 'privateflats.com' was designed (to avoid branding effects of existing market players). In the first stage of (1) model specification, relevant attributes and their levels were determined. There is growing consensus that selected attributes should reflect essential characteristics of the focal product (Abiiro et al. 2014). In light of our preceding discussion on the widespread adoption and theoretical relevance of signals related to the *feedback system, social graph* as well as *offline verifications and telepresence* (see Table 17 Table 17. Common trust-enhancing cues for paid accommodation sharing platformsand Section 2), we opted to explore the effects of five selected cues (attributes), which we deem to be representative of these three groups of signals. Additionally, since shared rentals are typically associated with *monetary costs*, this

factor was included as an attribute *(f) price* in our experimental set-up. To ensure that levels of the chosen attributes are "*plausible and capable of being traded*" (Coast and Horrocks 2007, p. 25), we drew on the findings from a pilot study, in which characteristics of 200 *private room* listings offered for rent in Milan on Airbnb were inspected. The sample selection for this pilot exploration was not intended to be comprehensive but rather embraced an exploratory objective. The following search criteria were applied for the sample selection: *size*: 1 bedroom, 1 bathroom, 1 bed; *neighbourhood*: whole city; *dates of the trip*: 27.11.2014 – 28.11.2014 and *price*: at least ≈11 Euro (for details see Abramova et al. 2015). Subsequently, content analysis was performed on the elicited listings to collect data on attributes (e.g., price and number of Facebook friends) that we can reference when deciding on attribute levels.

Attributes: Descriptive Text Displayed in the Experiment		**Attribute Levels**
Feedback System	**(a) Number of Positive Reviews**[8]**:** To facilitate the assessment of the trustworthiness of the offer, the reviews for the corresponding accommodation from other guests are published. In reality, these reviews are almost always positive, for this reason only their number is presented.	1) No reviews available so far 2) 1 positive review 3) 5 positive reviews 4) 15 positive reviews
Social Graph	**(b) Common Ground with the Host**: Hosts and guests can specify their (former) university and other information about themselves when registering. If there are similarities between the host and the guest, they are displayed. Otherwise, no information is provided.	1) No similarities with the host could be established (*in this case no information was shown*) 2) Host studied at the same university as the guest (respondent)
	(c) Number of Facebook friends: A host is given the opportunity to link his platform account with his Facebook account. This way one can see the number of Facebook friends the host has. It is also possible that the host does not specify a link to his Facebook account.	1) Account of the host has not been linked with Facebook (*in this case no information was shown*) 2) 75 Facebook friends 3) 200 Facebook friends 4) 743 Facebook friends
Offline Verifications and Telepresence	**(d) Verified Personal ID:** This online platform provides hosts with an opportunity to verify their personal identity card. This guarantees that the host is a real person. This verification is then displayed on the profile of the host. Otherwise, no information is provided.	1) Verification has not been undertaken (*in this case no information was shown*) 2) Verified personal ID
	(e) Verified Apartment Photo: This online platform provides hosts with an opportunity for the photos of their apartment to be taken by an accredited photographer. This guarantees that the presented photos correspond to the reality. This verification is then displayed on the profile of the host. Otherwise, no information is provided.	1) Verification has not been undertaken (*in this case no information was shown*) 2) Verified apartment photo
Monetay Cost	**(f) Price per Night:** Respondents were also instructed that the suggested offerings may also differ in terms of pricing.	1) € 35 2) € 45 3) € 55 4) € 65

Table 18. Operationalization of variables in our Discrete Choice Experiment

Summarized in Table 2, our proposed model specification addresses the crucial trade-off between the trustworthiness of an offering and its price. In our model, the (a) *number of positive*

[8] When faced with a complex decision-making process, consumers were shown to rely on easy-to-access and easy-to-process online information (Sparks and Browning 2010). Hence, only the *number of positive reviews* was explicitly shown to the respondents in our experiment, while the text in the review area was shadowed to avoid cognitive overload.

reviews per listing was employed to represent a '*feedback system*' group of signals. Several reasons guided this choice. First, in the e-commerce context the number of online reviews has been identified as a major driver of consumer purchasing decisions (Chen et al. 2004; Godes and Mayzlin 2004). Second, our choice to focus on the positive type of feedback was dictated by the overwhelming prevalence of such reviews on the accommodation sharing platforms (Zervas et al. 2015). This was also supported by the findings from our pilot study, in which 88% of all inspected reviews (N = 4467) contained only positive evaluations.

Selection of the specific levels for this attribute was guided by theoretical and practical interest, as well as the results of our pilot study. This is because the number of reviews per room fluctuate vastly in our data sample with an average of 22.3 and a median of 10 reviews. Furthermore, of particular interest is the likelihood of staying with a host who has not been reviewed yet or has only one review (5% of listings in the pilot study). Four levels of reviews were thus included: 0, 1, 5, and 15 positive reviews (see Figure 8 and Table 18).

Following our theoretical exploration (see Section 4.2), (b) the presence of *common ground* between a potential guest and a host was deemed to be representative of the '*social graph*' group of cues. The significance of *common ground* is corroborated by the qualitative study of Finley (2013), who revealed that the presence of a social connection has a favourable impact on trust in an Airbnb host. Because students and university graduates form the targeted sample for our study, having attended the same university between a host and a guest could be conceived as being indicative of *common ground* since, in most cases, alma mater is "*the source of person's cultural capital and intimate sense of fraternal kinship"* (Prendergast and Abelmann 2006, p. 39), which "*validates [individual] belief that […] values are in sync*" (Murphy 2014). Two levels of *common ground* were thus included: 'no common ground established' or 'the host studied in the same university' as the respondent. Additionally, the (c) *number of Facebook friends* of a host was employed as another cue based on *social graph*. In our exploratory study, the number of Facebook contacts of a host was visible in more than half of the listings (N = 112), yielding a mean of 734 and median of 525 friends (SD = 641). Moreover, a representative survey by Smith (2014) documented a median number of 200 Facebook friends (mean = 338); 39% of adult users are found to have between 1 and 100 'friends' and 15% have more than 500 contacts. Hence, four levels of Facebook friends were included: 'account has not been linked to Facebook', 75, 200 and 743 Facebook friends.

Cues related to "*offline verifications and telepresence*" were operationalized by including the availability of: (d) *verified personal ID*, and; (e) *verified apartment photo* as attributes in our

experimental design. *Verified personal ID (d)* is intended to clear doubts about the identity of the account holder and his/her past reputation (Ba et al. 2003). In our pilot study, 40% of the hosts have verified their personal ID with Airbnb, suggesting a reasonable interest in this cue. Two levels of this attribute were thus included: 'verification has not been undertaken' and 'personal ID has been "verified"'. Likewise, *verified apartment photos (e)* can be seen as another signal of trustworthiness. This verification with the help of professional photographers serves multiple purposes. First, listings with high-quality images could contribute to an overall positive impression of the platform, which in turn may induce trusting beliefs towards the platform in general (Finley 2013; Karvonen 2000). Second, this verification signals the existence and current condition of the accommodation, thereby reducing another layer of uncertainty concerning the offering (Airbnb 2016c; Finley 2013). Two levels of this attribute were included: 'verification has not been undertaken' and 'apartment photo has been "verified"'.

Monetary cost is a salient driver of accommodation choice as the rental *price (f)* should fit a guest's budget. Our exploratory study of private room listings on Airbnb revealed a broad spectrum of prices ranging from €23 to €150 per night with a mean value of €62 (S.D. = €22) and a median value of €58. To assure the realism of the pricing levels for our sample population, we administered another survey on a sample of university students (N = 167) to elicit the general WTP and maximum WTP (i.e., upper bound price) they can afford for an overnight accommodation in Milan. Results yielded a mean value of €56 and a median value of €45 for a general WTP; maximum WTP had a mean value of €78 and a median value of €60. We therefore opted for four pricing levels: €35 (one S.D. away from the median derived in the pilot study); €45 (based on the median general WTP from the survey); €55 (based on the median value in the pilot study and the mean general WTP in the survey-based pre-study); €65 (based on the mean value in the pilot study and the median maximum WTP from the survey).

4.3.2 Experimental Design, Questionnaire Development and Sampling

In the experiment, participants were first familiarized with the accommodation sharing context by exposing them to a fictional storyline: "*Imagine the following situation: You plan a weekend city trip to Milan. Therefore, you are looking for a room to stay (in an apartment). You are ready to share the rest of the apartment with the host. Your best friend has recommended you an online platform called privateflats.com, in which private people offer rooms or even entire apartments for rent (just like on airbnb.com). After an extensive search, you have selected some*

rooms that match your taste. Below an example of such a room is presented". Next, eleven photos of a room were presented, similar to what potential guests would encounter on Airbnb or 9flats. We then measured participants' *attitude towards the presented room* via the scale of Bhattacherjee and Premkumar (2004): Participants were asked to specify if "*all things considered, renting this room will be a: (ATT_1) bad idea - good idea; (ATT_2) foolish move - wise move; (ATT_3) negative step - positive step*" (using a 7-point semantic differential scale). In the second step, participants were instructed about possible disparities in the listings with respect to the select attributes (see Table 18). It was hinted that: *"Although all rooms that you have selected are visually similar, it may be that you still feel some uncertainty when it comes to the final decision. To minimize these uncertainties more information is provided to the potential guests regarding the attributes of specific listings. In our study the listings can differ with regard to the following attributes:*" Immediately after, the list of attributes, as shown in Column 2 of Table 18, were presented. Specific values corresponding to different attribute levels were not accessible to participants at this point (Column 3 of Table 18). This presentation preceded a graphical illustration of a listing in which all attributes were highlighted for emphasis. In the third step, participants were offered a series of choice sets in a randomized sequence with two listing alternatives per choice (levels of attributes varied) (see Figure 8).

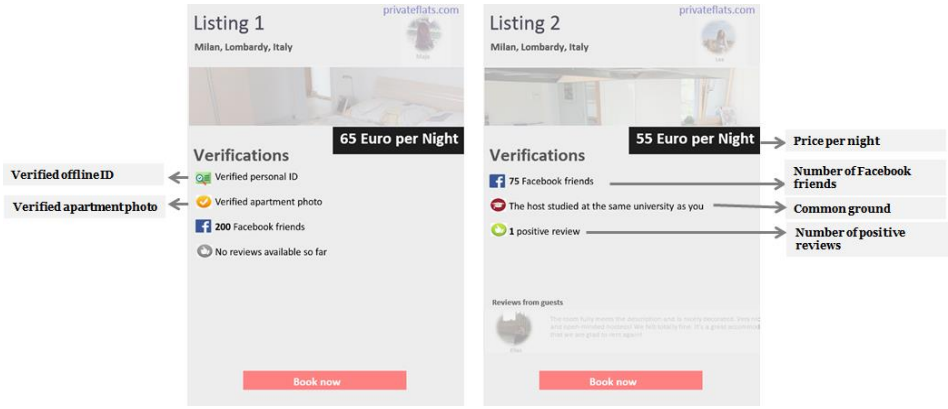

Figure 8. Example of a choice situation in Discrete Choice Experiment [9]

The 'look and feel' of the listings was similar to the design of popular accommodation sharing platforms with slight variations. In each choice set, respondents were requested to choose one listing alternative that they would rent ('Listing 1' or 'Listing 2'). A 'no choice' option was also included ('I would choose none of these listings') to cover situations where none of

[9] Explanations for the attributes were not given across the choice sets and were only utilized for explanatory purposes in the beginning of the survey (see description of Step 2 above).

presented listings was acceptable for a respondent. The number of choice sets was derived via the D-efficient design. This is because the number of treatments for full-factorial design would be impractical (i.e., 4 x 4 x 2 x 2 x 2 x 4 = 512 possible profiles and 512!/[2!(512-2)!] = 130816 permutations of two-alternative choice questions). At the same time, D-efficient design represents the most common solution when it comes to the trade-off between statistical efficiency and a pragmatic number of questions to ask (Bliemer and Rose 2010). Computed with the SAS (2015) software, our analysis suggested that the efficient design could be reached with either 16 or 32 distinct choice sets. To minimize the cognitive load for the respondents, we opted for the former option. In the fourth and final step, we solicited participants' demographic information and their previous experience with accommodation sharing platforms.

Participants were recruited via several mailing lists of one German university and by posting on Facebook boards. A lottery of 20 Amazon.de gift cards (€ 10 value each) was offered. 472 usable responses were collected. To check for fatigue and other confounds caused by anonymous responding, a manipulation check was incorporated: the 17th choice card included an alternative that is clearly inferior to the other. Participants who did not pass this manipulation check or have always chosen the 'no choice' option were excluded from further analysis (N = 22). We eventually arrived at a final dataset of 450 responses. While discussion about the required sample size for DCE is still ongoing, a common rule of thumb suggests that the minimum size should exceed the following threshold (Orme 2010):

$$N \geq 500 \cdot \frac{L^{max}}{J \cdot S}, \quad (4),$$

where N is the suggested sample size, L^{max} is the largest number of levels for any given attribute, J is the number of alternatives and S is the number of choice situations in the design. For our study, this threshold equals 500*4/(2*16) = 62.5, and the actual sample size of N = 450 easily surpass this criterion. In terms of demographics, our sample consists of students (88.4%); 49.6% and 44.9% of participants are aged between 18 and 24, and between 25 and 33 years old respectively. Our sample is somewhat dominated by female participants (68%) and by those who have spent most of their life in Germany (89%). Nearly half of the participants (46.2%) have completed their secondary education, 36.4% have finished their undergraduate studies and 11.3% have graduated with a master degree. 38% of participants have already been guests and 8% have hosted on sharing platforms. Demand for temporary housing was relatively large: last year alone, 30% of respondents needed temporary lodging for 8-14 days in total; 20% for 15-30 days; and 10% for 31-60 days. Respondents also expressed a favourable attitude towards the

apartment they were offered as an example in the beginning of the experiment: mean *ATT_1=5.44* (*SD=1.35*); *ATT_2=5.41* (*SD=1.26*); *ATT_3=5.45* (*SD=1.26*).

4.3.3 Analytical Results

A mixed logit model was constructed for data analysis due to its ability to work with any distribution of random coefficients and approximate any random utility model (McFadden and Train 2000). Moreover, mixed logit models are not subjected to the limitation imposed by the independence of irrelevant alternatives (IIA) assumption found in standard logit models. Because mixed logit allows "*for random taste variation, unrestricted substitution patterns, and correlation in unobserved factors over time*" (Train 2009), it takes into account plausible correlations among the 16 choices made by a single participant. For our model, the specification of the utility function of an individual i choosing a housing alternative j in a choice set t is as follows:

$$U_{jit} = c_j + \beta_1 Price + \beta_2 Positive\ reviews + \beta_3 FB\ friends + \beta_4 Common\ ground + \\ + \beta_5 Verified\ ID + \beta_6 Verified\ apartment\ photo\ + \mu_i + \varepsilon_{jit} \quad (5),$$

where μ is the normally distributed error component with mean zero and standard deviation σ_μ, which varies across participants i and alternatives j and embodies the correlations between observations obtained from the same respondent. The error component ε is assumed to have Gumbell distribution with mean zero and accounts for discrepancies among participants i, alternatives j and choice sets t (Potoglou et al. 2013). The statistical assessment of the mixed logit model was performed via SAS software (SAS 2015) and assumed normal mixing distribution for price.

First, to estimate how well the mixed logit model fits the data, we analysed various goodness-of-fit (GoF) indices. For a discrete choice model, the values of McFadden's statistic in the range between 0.2 and 0.4 are accepted as good (Louviere et al 2000). Since we achieve a value of 0.26 for our model, an appropriate GoF can be presumed. Another frequently utilized measure – adjusted Estrella value which ranges from 0 (no fit) to 1 (perfect fit) – reached a level of 0.49, supplying further evidence of GoF (SAS Institute 2012).

The parameters of the model $\beta 1$ – $\beta 6$ and the constant c were estimated on the basis of our dataset. Beyond estimating the effect of different attribute levels on the overall utility, we further calculated participants' willingness-to-pay given a change in attribute levels (i.e., marginal willingness-to-pay, MWTP) using a price parameter included in our model.

Specifically, assuming linear utility function, MWTP was computed as follows (Kjær 2005, Ryan et al. 2008):

$$MWTP = \frac{\beta_{attribute}}{-\beta_{price}} \quad (6).$$

Summarized in Table 19, our findings proffer an interesting synopsis of the effectiveness of trust-enhancing cues explored in our study. Specifically, our estimation results show that the *number of positive reviews* emerges as the most effective trust-enhancing cue in our sample, with all levels having a significant positive impact on one's willingness to engage in a transaction. It appears that participants tend to treat the number of positive reviews on 'the more – the better' basis when choosing the housing alternative. Compared to the reference level, when 'no reviews are available', '5 positive reviews' (β = 1.47, p < 0.0001) are valued twice as much compared to just '1 positive review' (β = 0.79, p < 0.0001). Similarly, '15 positive reviews' (β = 2.31, p < 0.0001) are valued higher than '5 positive reviews'. In terms of price premiums, the availability of just one positive review is estimated at €9.45 as compared to the 'no reviews' scenario for the overall sample. Furthermore, 5 positive reviews are worth €17.72 whereas 15 positive reviews are valued at €27.76, which is close to the lowest price level of €35 being offered for the housing alternative. Together, this points to a prominent role of *feedback system* in enhancing consumers' trust in accommodation sharing.

Cues	Attribute	Attribute Level	Estimate	MWTP
Feedback System	Number of Positive Reviews	no reviews	Reference level	
		1 positive review	**0.79****	€9.45
		5 positive reviews	**1.47****	€17.72
		15 positive reviews	**2.31****	€27.76
Social Graph	Number of Facebook Friends	no link to Facebook	Reference level	
		75 Facebook friends	0.12	€1.46
		200 Facebook friends	0.09	€1.07
		743 Facebook friends	*-0.16**	€-1.89
	Common Ground	no common ground	Reference level	
		same university	**0.22****	€2.60
Offline Verifications	Verified ID	not verified	Reference level	
		verified ID	**1.47****	€17.72
	Verified Apartment Photo	not verified	Reference level	
		verified photo	**1.04****	€12.57
		Price	**-0.08****	
GoF	Adjusted Estrella	0.49		
	McFadden's pseudo R-square	0.26		

Note: Significant at **<0.0001; *<0.1 level; all values are rounded off to two places of decimals.

Table 19. Model estimates

The effects of *offline verifications and telepresence* cues are also visible: both coefficients for the *verified personal ID* (β = 1.47, p < 0.0001) and for the *verified apartment photo* (β = 1.04, p < 0.0001) are highly significant. Interestingly, for the overall sample, MWTP for 5 positive

reviews and for verified host's identity is identical at €17.72. Willingness-to-pay for the verified photo of the apartment is also high, reaching €12.57 for overall sample. At the same time, we observe that respondents only partially rely on cues grounded in *social graph*. The *number of Facebook friends* a host has does not significantly influence participants' decision to engage in a transaction. Moreover, the model offers a weak confirmation that a large number of friends, which in our case is 743, may trigger suspicion (β = -0.16, $p < 0.1$). The influence of *common ground* (i.e., same university) is statistically significant but is relatively low (β = 0.22, $p < 0.0001$) with MWTP at €2.60 for this cue. Furthermore, as anticipated, *price* significantly influenced the choice of alternatives, but surprisingly, was not the most decisive factor for participants (β = -0.083, $p < 0.0001$).

4.3.4 Market Simulations

In the next step, we employed discrete choice analysis to predict consumer choices for predefined combinations of attributes using simulations. A market simulator considers what-if scenarios to examine new product design or improve product positioning and pricing strategy (Orme 2010). Shares of preferences were predicted via mixed logit model in that the probability of choice is assumed to be a logit function of utility (SAS Institute Inc., 1993). Initial mixed logit estimates serve as a starting point for our analysis (see Table 19). In the first series of simulations (Figure 9), the effect of positive feedback was scrutinized given the positive impact of a feedback system determined in our study. Two alternatives were considered – a listing with '*no reviews*' and a listing with '*15 positive reviews*'. To complete the choice set, the '*no choice*' option was added as well. All other trust-enhancing cues were prefixed for both listings at '75 Facebook friends', 'host studied in the same university as you' (abbreviated as 'common ground'), 'verified personal ID' and 'verified apartment photo'. Figure 9 depicts the market share of preference for the two listings *as a function of price of the listing with '15 positive reviews' (price of the listing with 'no reviews' was fixed at* €35*).*

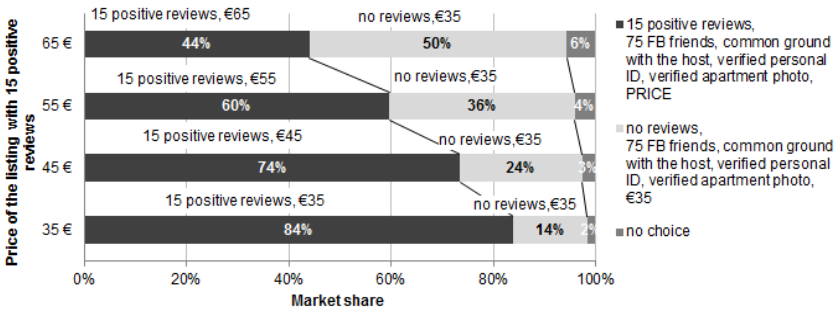

Figure 9. Market share simulations 1

Except for the first simulation round when pricing levels are equal (€36), our results reveal participants' behaviour when they are confronted with 'trustworthiness vs. price trade-off'. By reducing information asymmetries and thereby enhancing trust, the presence of '15 positive reviews' bolsters the attractiveness of the listing so much so that it dominates the market for pricing levels between €35 and €55. Only when pricing levels shot above €65 per night will the listing with '15 positive reviews' lose its market leadership. This is because half of the participants (50%) on our simulated sharing platform will take a risk and prioritize a significantly cheaper (€35) room without any reviews. Findings from our market simulations thus suggest that consumers, despite attributing considerable value to a feedback system, may be willing to compromise when the monetary stakes become prohibitively high.

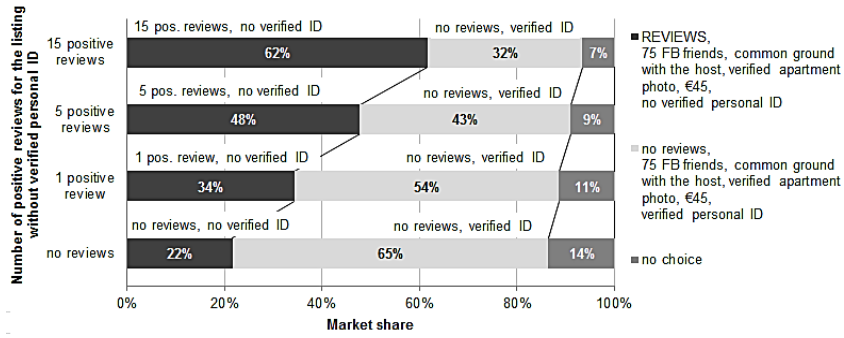

Figure 10. Market share simulations 2

In the second series of simulations, a trade-off between different types of trust-enhancing cues was explored by focusing on two offerings – *a listing with a verified personal ID* and *a listing without it* – and varying the *number of positive reviews* received. This particular combination of cues was selected for investigation due to their importance for the overall sample. For *a listing without a verified personal ID*, the *number of positive reviews* varies from *0 to 15* as can be seen on the vertical axis of Figure 10. Conversely, for *a listing with a verified personal ID*, *the number of reviews* is set to 0. 'No choice' option was included as well. All other trust-enhancing cues were kept homogeneous for both listings. We observed that when both listings are *not reviewed*, an offer with a *verified personal ID* is preferred by 65% of participants. Just '1 positive review' alone does not convince the majority to switch to a listing without ID verification. However, a listing with '15 positive reviews' dominates the market, dwarfing the value attached to a *verified personal ID*. Our market simulations thus suggest that consumers, despite valuing personal ID verification, are inclined to trust independent reviews when their numbers become sufficiently large.

4.4 Discussion, Implications and Concluding Remarks

Building on the Signalling Theory (Akerlof 1970), this study sets out to investigate the effectiveness of trust-enhancing cues in affecting consumers' willingness to transact on accommodation sharing platforms under conditions of uncertainty. Consistent with prior research (Wang et al 2004; Wells et al. 2011; Zervas et al. 2015; Möhlmann 2016), our findings attest to the cruciality of cues in building trust, which in turn culminates in desirable behavioural outcomes like intention to transact and willingness to pay. First, we demonstrate that even though consumers do trade-off between trustworthiness and price (see Figure 3), *feedback system* fully accomplishes its trust-enhancing function. In line with our empirical findings, the *number of positive reviews* emerges as being instrumental in shaping consumers' decisions about which listing to rent from. Consumers appear to rely on the heuristic of 'the more – the better' with higher numbers of positive reviews culminating in higher price premiums. Compared to listings with *no reviews*, consumers are willing to pay €27.76 extra for a listing with 15 positive reviews. Second, *offline verifications* have also been proven to embody trust-enhancing capabilities. In contrast to unverified listings, both *verified personal ID* and *verified apartment photo* emerge as significant drivers of accommodation sharing transactions, prompting consumers to pay €17.72 and €12.57 extra respectively. Interestingly, our results suggest that the trust-enhancing capability of *verified personal ID* is equivalent to the effect of *5 positive reviews*. All in all, in line with the work of Ba et al. (2003) and Finley (2013), our findings testify to the importance of expanding and enforcing platform verification frameworks because such measures seem to be valued by consumers. Third, surprisingly, cues grounded in *social graphs* exhibits only marginal significance. Although the presence of a *common ground with the host* has a positive impact for the overall sample, its contribution and related price premium are comparatively small unlike results reported by Finley (2013). At the same time, the *number of Facebook friends* was generally disregarded by consumers.

Several caveats in the interpretation of our empirical findings should be mentioned. First, we concentrate solely on the quantitative aspects of feedback systems (i.e., number of reviews) because the qualitative (or semantic) components of feedback are beyond the scope of our study. Moreover, only positive reviews were considered. While negative reviews are very rare on sharing platforms (Zervas et al. 2015), it is still a limitation that should be addressed in future research. We also render the face of the host and reviewers unidentifiable to participants even though we acknowledge that past studies have supplied evidence attesting to the impact of facial expressions on trusting beliefs (e.g., Steinbrück et al. 2002). Likewise, we kept the platform

name fictional to avoid branding effects. Finally, our sample comprises primarily of German students. While students constitute an important customer segment for accommodation sharing platforms, we encourage future studies to replicate our work with a more representative sample.

5 Paper C: The Role of Response to Negative Reviews in the Peer-to-peer Accommodation Sharing Network

Title

Understanding the Sharing Economy: The Role of Response to Negative Reviews in the Peer-to-peer Accommodation Sharing Network

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Abstract

Recognizing the potentially ruinous effect of negative reviews on the reputation of the hosts as well as a subjective nature of the travel experience judgments, peer-to-peer accommodation sharing plat-forms, like Airbnb, have readily embraced the "response" option, empowering hosts with the voice to challenge, deny or at least apologize for the subject of critique. However, the effects of different response strategies on trusting beliefs towards the host remain unclear. To fill this gap, this study focuses on understanding the impact of different response strategies and review negativity on trusting beliefs towards the host in peer-to-peer accommodation sharing setting utilizing experimental methods. Examination of two different contexts, varying in the controllability of the subject of complaint, reveals that when the subject of complaint is controllable by a host, such strategies as confession / apology and denial can improve trusting beliefs towards the host. However, when the subject of criticism is beyond the control of the host, denial of the issue does not yield guest's confidence in the host, where-as confession and excuse have positive influence on trusting beliefs.

Keywords

Sharing Economy, Airbnb, Online Reviews, Negative Reviews, Response

5.1 Introduction

While ownership has always been at the heart of economic well-being (de Lecaros-Aquise 2014), the new "sharing economy" is revolutionizing the modern consumption. Indeed, this new approach encourages consumers to enjoy the bonuses of possession while simultaneously minimizing customer responsibility and monetary investments, as well as lowering the "carbon footprint" (Botsman and Rogers 2010; Hamari et al. 2013). Indeed, numerous marketplaces have mushroomed in recent years, helping to organize "sharing, bartering, lending, trading, renting, gifting, and swapping" of goods and services on the peer-to-peer basis (Botsman and Rogers 2010, p. 30). Among them, peer-to-peer sharing platforms for apartments and rooms (e.g. Airbnb and 9flats), parking places (ParkatmyHouse), cars (e.g. UBER, Lyft), household devices and appliances (Zilok), and clothes (GirlMeetsDress) have been seen as pioneers in their respective industries, creating customer value on an unprecedented scale (Botsman and Rogers 2010).

The accomplishments of the "sharing economy" have been particularly remarkable in the hospitality industry, with platforms like Airbnb, 9flats or Roomorama transforming the industry landscape traditionally dominated by hotels. Particularly Airbnb has witnessed the most rampant growth since its launch in 2007, boasting 4 million guests, presence in 190+ countries and 300000 listings in 2013 alone (Airbnb 2014). However, while the idea of staying in cheaper (than hotels) private apartments when travelling has indisputable advantages, this concept is not without its challenges. Specifically, while hotels are subject to significant regulation with regard to their facilities, equipment, furnishing and additional services, as reflected in their star system, peer-to-peer platforms do not enjoy the same type of information transparency, often leaving guests wondering about the quality and safety of the suggested offerings. As a result, mutual trust between hosts and guests emerges as a centrepiece of these platforms, and is often seen as an invisible "currency" driving consumer decision-making and transactions (Botsman 2012; Edelman and Luca 2014; Green 2012a, 2012b).

Hence, as a part of their trust-promoting strategy, platforms like Airbnb offer users a plethora of trust-enhancing cues, including offline ID verifications, links to social media accounts of hosts and guests, verified photos and videos of the apartments and their owners, as well as an online review system (e.g. Airbnb 2014). In this environment of cues and hints, particularly

reviews represent an important component of trust-building efforts, as they have been consistently shown to be the most influential factor in consumer decisions for online marketplaces characterized by information asymmetry (Chatterjee 2001; McKnight et al. 2002a, 2002b). However, while all types of reviews may affect consumer choices, these are particularly negative reviews which draw potential guests' attention and are under their constant scrutiny (Bambauer-Sachse and Mangold 2011) – a phenomenon known as the negativity bias" (Vaish et al. 2008).

Recognizing the potentially ruinous effect of negative reviews on the reputation of the other party (both a host and a guest) as well as a subjective nature of the travel experience judgements, marketplaces, like Airbnb, have readily embraced the "response" option, empowering the accused party with the voice to challenge, deny or at least apologize for the subject of complaint. Indeed, past research from the areas of crisis communication (e.g. Lee and Song 2010) and service failure / recovery management (e.g. Munzel et al. 2012) offers some evidence that not only a review but also a response (if available) work to form public opinion, with some response strategies being more beneficial than others (Lee and Song 2010).

Nonetheless, little is known about the effectiveness of response in peer-to-peer sharing settings in general and on apartment sharing platforms in particular. Gaining an insight into this area is, however, of considerable importance, since these findings can provide actionable recommendations for hosts and guests in their private reputation management, as well as serve the purpose of better education of how to behave in such contexts. Against this background, this study utilizes experimental methods to get the understanding of the impact of review negativity and different response strategies on the trusting beliefs towards the host in peer-to-peer accommodation sharing settings. As such, these findings may enrich a currently scarce body of research on how users interact with trust-enhancing cues in the new "sharing economy"- a novel direction of the human-centred stream of Information Systems research.

5.2 Related Work

Helping to mitigate the feeling of risk and insecurity involved when transacting with geographically distributed and anonymous peers, trust is an unalienable part of the decision-making process in peer-to-peer sharing settings (Edelman and Luca 2014; Green 2012a, 2012b). While a variety of mechanisms work to establish and promote trust in online marketplaces characterized by information asymmetry, online reviews remain the most prevalent and influential form for the assessment (Chatterjee 2001; McKnight et al. 2002a, 2002b). Presented

as written evaluations of users' own experiences, reviews facilitate the selection of the best alternative as they guide consumer through the myriad of offers (Blal and Sturman 2014). Particularly in the hospitality industry, online reviews are extremely important, with users preferring feedback from other guests over the information posted by travel agencies (Chen and Xie 2008; Gretzel and Yoo 2008).

While the impact of positive reviews is well-documented (Chevalier and Mayzlin 2006; Clemons et al. 2006), there is solid support for the special role of negative reviews in consumer decisions. Specifically, the effect of negative reviews is leveraged by the so-called "negativity bias" which is defined as "*the propensity to attend to, learn from, and use negative information far more than positive information*" (Vaish et.al. 2008, p. 383). Indeed, research confirms the unfavourable impact of negative online reviews on product attitude and, thereby, on purchasing intentions (Lee et al. 2008; Vermeulen and Seegers 2009), and, as a consequence, on sales (Liu 2006; Vermeulen and Seegers 2009) and revenue (Cabral and Hortaçsu 2010). Additionally, recent findings have underscored the role of emotional tonality in how the negative review is expressed (e.g. anxious vs. angry) suggesting a complex picture with regard to the effects of negative feedback on consumer perceptions and decisions (Yin et.al. 2014). Particularly for the apartment sharing platforms, like Airbnb or 9flats, the impact of negative reviews might be critical: Since most feedback provided on these platforms is overly positive, negative reviews stand out and, therefore, might be particularly scrutinized by the potential guests (Bambauer-Sachse and Mangold 2011; Park and Lee 2009). Hence, considering their potential significance, this paper focuses on the impact of the negative reviews in peer-to-peer accommodation sharing settings.

Recognizing the importance of reviews in ultimate consumer choices, online marketplaces increasingly empower the reviewed party with the "response" option, which may be used as a channel to challenge negative, unfair or otherwise undesirable feedback in the review systems. For example, such platforms as Airbnb, Yelp, and TripAdvisor do not only enable response function but also publish guidelines on how to respond to reviews. Also scholarly research provides some empirical evidence that not only reviews but also response and especially its specific type matter (Munzel et al. 2012). For example, the presence of an accommodative response to a negative review has been shown to have a greater favourable impact on consumers' evaluation of the company when compared to the defensive response or the absence thereof (Lee and Song 2010). However, despite the potential importance of response in the case of online review systems, research is this area still remains limited, with existing studies largely

drawing on the evidence from related fields, such as crisis communication (e.g. Lee and Song 2010) and service failure / recovery management (e.g. Munzel et al. 2012).

In this research different approaches to the classification of response strategies have been used. For instance, building on the image restoration theory, Benoit (1997) discusses five major groups of responses – denial, evasion of responsibility, reducing offensiveness of the event, corrective action and mortification. At the same time, Garrett et al. (1989) work with four major response strategies adapted from social accounts literature. Another well-known approach establishes a conceptual link across different responses is their placement along the accommodative-defensive continuum, in which responses range from accepting to denying (Coombs 1998). Building on this idea, Coombs (2006) pro-poses and empirically tests the classification of response strategies – deny, diminish and deal - that cluster around the concept of company's care for victims of the crisis and its responsibility.

In this context, the notion of the attribution of responsibility emerges as particularly relevant, coming across multiple studies on responses to negative eWOM (Lee and Song 2010), crisis communication (Coombs 1998, 2006) and service recovery/failure (Bitner 1990). Specifically, an unpleasant incident (the subject of the negative review) can be "*attributed to external causes that are either uncontrollable ("The flight was delayed because of a blinding snowstorm") or controllable ("The personnel are poorly trained so that boarding takes forever")*, with controllable causes being more detrimental (Weiner 2000, p. 384). Indeed, if individuals believe that the crisis situation in question was controllable, they will be more dissatisfied than in the case of non-controllable incidents (Bitner 1990). By offering an explanation for the incident (by responding), a company tries to alter attribution perceptions (Coombs and Holladay 1996). This is also relevant to the context of our study: negative online reviews are examples of expressed dissatisfaction; and responses to negative reviews can be seen in part as attempts to provide explanations after a complaint. Discussing the role of the attribution theory in consumer behaviour, Weiner (2000) identifies three strategies that a company can use for impression management after a consumer has expressed product dissatisfaction, namely (1) denial, (2) excuse and (3) confession / apology. By relying on the (1) denial strategy a company is trying to refute occurrence of any negative event. At the same time, the use of the (2) excuse strategy implies the provision of explanations about uncontrollable causes of the incident. Finally, (3) confession / apology presume a pardon by an accused party and an offer of restitution. Considering the theoretical relevance, in this study we focus on exploring the role of these three

response strategies for guest complaints that focus on issues with a high and a low degree of control by the accused party.

5.3 Exploratory Pre-Study

In order to understand the landscape of reviews and their respective responses in the peer-to-peer accommodation sharing setting, an exploratory screening of private room listings for two popular touristic destinations was conducted in the context of one popular peer-to-peer accommodation sharing plat-form. Specifically, 82 listings for New York and 200 listings for Milan and their respective reviews were screened. While the overwhelming majority of reviews were positive, reviews with varying degree of negativity were also observed, ranging from "very minor" complaints: "… *The only thing I could note was that the pillows were too soft for my taste - but I guess that's truly subjective*…"; to "moderate", e.g. "*The room was not the same as on the pictures, maybe the furniture has been rear-ranged*…" and to "severe" ones: "*The breakfast was awful and unappetizing I left with nothing*…" or "*I was disappointed that the photos provided did not represent the room that I was given*..." (Airbnb 2014). In the following step, responses to reviews with "moderate" and "severe" degree of negativity were screened, when available. In line with the classification of Weiner (2000), three categories of responses could be found:

- "confession/apology", e.g. *"…Sorry you felt that way about the cleaning we will improve I apologize for any issues that affected your trip..."*;
- "denial", e.g. *"…You did a big mistake, I live on 3th FLOOR not 5th...it's very different with-out a lift…"*;
- "excuse", e.g. *"…fortunately and unfortunately Design Week is the biggest event of the year and make difficulties also about parking and confusion…"* (Airbnb 2014).

Moreover, other approaches to respond to negative feedback that go beyond the classification of Weiner (2000) could also be observed. For example, the following response categories were also visible: corrective action ("…*Now we have updated our booking confirmation…*"), thanking the customer *("…Many thanks to share your comments..."*) or even being aggressive against the guest (*"…YOU HAVE BOUGHT EXACTLY WHAT WAS WRITTEN, YOU ARE VERY INCORRECT MAN…")* (Airbnb 2014). Especially the presence of the latter category is discomforting, emphasizing the importance of user education in this domain. All in all, even though preliminary in nature, our exploratory screening confirms that reviews differ by the amount of negativity expressed as well as by possible reactions of hosts to these censorious

remarks. Together, these findings legitimate further exploration in this domain, including the design and execution of our own experiment.

5.4 Hypotheses

5.4.1 Negative Valence of the Review

Negative reviews are known for having a negative impact on consumers' attitudes (e.g. Lee et al. 2008). In the service failure context, the problem severity has been linked to the lower customer satisfaction and purchase intentions (Conlon and Murray 1996; Smith et al. 1999). Additionally, the judgment of responsibility may also be positively linked to the severity of the event (Coombs 2006; Lee 2005), thus worsening the image perceptions (Coombs 1998), impression and trust towards the organization (De Blasio and Veale 2009; Lee 2005). Similarly, in the peer-to-peer accommodation sharing settings it is expected that negative reviews will have a negative impact on the perception of trust to-wards the host. For example, a negative review like: "*I was disappointed that the photos provided did not represent the room that I was given. It was smaller, had bare walls, a small bookshelf, a nightstand, and a small table with a tiny desk chair*" (Airbnb 2014) is unlikely to promote trusting attitudes towards the host as it may imply a certain level of misrepresentation and, hence, dishonesty – a key component of trusting beliefs (McKnight et al. 2002b). All in all, we hypothesize that:

H1. The higher the negativity of a review, the lower the trust towards the host.

5.4.2 Response Strategy: Confession / Apology

Various studies have shown the effectiveness of apologetic responses in terms of attitudes towards the company in comparison to other less accommodative strategies (e.g. Conlon and Murray 1996; Lee and Song 2010). For example, in the context of online complaints it has been demonstrated that accommodative responses, namely a combination of apology and an offer of compensation, result in more positive attitudes towards the company as opposed to a defensive reaction and lack of response (Lee and Song 2010). This may be partly because of the special role of apology as it transmits *"a good person committed a bad act"* message to the consumers and helps to soften a conflict situation (Weiner 2000, p. 386). Moreover, based on empirical data, Munzel et al. (2012) argue that is better to apologize even if the company is not responsible for the incident. Taken together, we argue that:

H2. Compared to the absence of response, apologetic response will have a positive impact on trust perceptions towards the host.

5.4.3 Response Strategy: Denial

Based on our pre-study we observe that denial is a used response strategy in the context of peer-to-peer accommodation sharing platforms, with some hosts denying the existence of the issues mentioned in the review either directly by expressing it through "I do not agree", "It is not true" or indirectly providing counter-arguments and showing the situation was different from how the guest described it. For example, one guest argued: "*to let information not true, is never correct! my home is far from the metro station " ca granda " only 2/3 minutes walking , and not 10 minutes!*" (Airbnb 2014). While some studies show a positive impact of this strategy in specific settings (e.g. Van Laer and de Ruyter 2010), there is a growing body of research refuting this view. For example, De Blasio and Veale (2009) find that denial results in lower scores of the impression of the organization, compared to excuse, no comment, apology and correction strategies. Moreover, Lee and Song (2010) show that exposure to the online critique coupled with a defensive response was more likely to lead observers to the conclusion that the company was responsible for the incident. In a complimentary finding, Lee (2005) reveals that by demonstrating responsibility with the help of the accepting response an organization is eventually blamed less for the crisis. Taken together we argue that:

H3: Compared to the absence of response, denial has a negative impact on trust perceptions towards the host.

5.4.4 Response Strategy: Excuse

Using the excuse strategy, a company introduces uncontrollable causes of the event in question as an explanation for what has happened (Weiner 2000), thereby distancing itself from the responsibility for the incident or denying its own responsibility when shifting the blame to a third party (Coombs 2006; Garrett et al. 1989). As an excuse is aimed to limit perceptions of responsibility (Coombs 2006), and perceptions of responsibility are in turn negatively related to impression and trust to organization (De Blasio and Veal 2009; Lee 2005), one can assume that a successful excuse would also have a positive impact on trust perceptions in the context of peer-to-peer accommodation sharing platforms. For example, making use of this strategy in response to a complaint, one Airbnb host has argued: "*"It's true, that Sunday the whole building was left without central heating for a few hours due to a breakdown of the heater, so it was*

quite cold!! Although it wasn't our fault, we felt very sorry..." (Airbnb 2014). In this case a plausible excuse that may work to limit the damage resulting from the negative feedback. Hence, we hypothesize that:

H4. Compared to the absence of response, excuse has a positive impact on trust perceptions towards the host.

5.5 Methodology and Results

5.5.1 Experiment Design and Flow

To determine the impact of different response strategies on trusting beliefs, 2 x 4 x 2 experiment was designed, in which review negativity (moderate vs. strongly negative), response strategy (confes-sion/apology, denial, excuse, no response) and the context ("high control" vs. "low control") were manipulated. Considering a well-established role of control in interpreting complaints in such settings (Coombs 2007a, 2007b), hypotheses were tested for two contexts that varied with regard to the controllability of the subject of complaint. Specifically, in the "high control" context a negative review about *cleanliness* of the room was provided. The "low control" context focused on the *location* of the apartment – a concern obviously beyond the influence of the host. Treatment conditions were formulated on the basis of existing reviews and responses of the actual guests and hosts identified in the pre-study, and were pre-tested with 16 subjects. Necessary adjustments to improve contrasts were made based on the elicited feedback (see Table 21).

Upon accessing the survey participants were first asked to imagine that they were planning a weekend trip to Milan and were looking for a room in an apartment as a cheaper alternative to a hotel (step 1 of Figure 11). A fake platform name "privateflats.com" was used to avoid any reputation bias with existing market players.

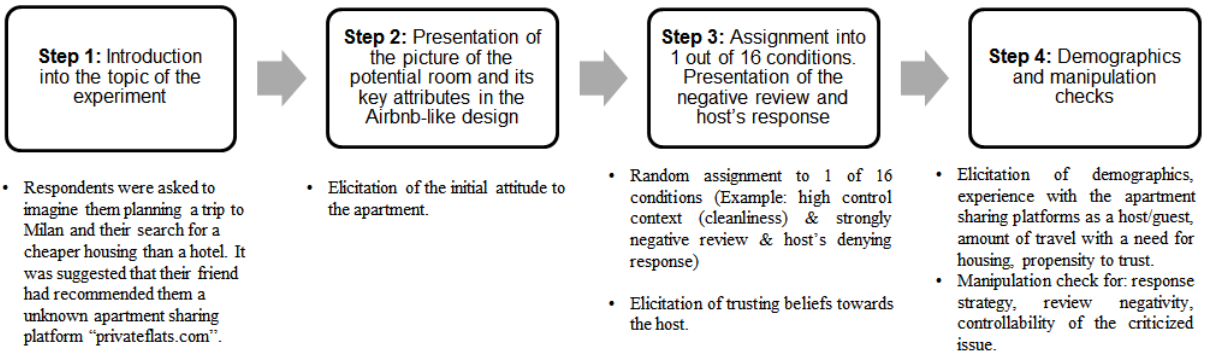

Figure 11. Flow of the experiment

In step 2 (see Figure 11), respondents were presented with a picture and a description of a room offered for rent (including its key attributes) similar to the way it is done on Airbnb.com or 9flats.com. Price and other attributes were chosen on the basis of our exploration of existing room offers for Milan (see section 5.3). As a result, a median price of 56 Euro per night and per person (including service as well as a cleaning fee) was taken. Further, the icons "kitchen", "heating", "air-condition" and "essentials" (e.g. towels, bed linen, soap and toilet paper) were presented on the profile screen as well, since they were frequently mentioned amenities in our sample. The photos of the apartment were shot privately. Presented with the picture of the accommodation, respondents were asked to express their initial attitude to the apartment (see Table 20), which was subsequently used as a control variable to account for an initial impression of the presented offer.

In step 3 (see Figure 11), participants were randomly assigned into one of 16 treatment conditions (2 contexts: 2 negativity levels x 4 response strategies), i.e. between-subjects design was employed (see Table 21 and an example in Figure 12). Upon viewing the review and the corresponding response in their condition, respondents had to assess their trusting beliefs towards the host (our dependent variable) using the benevolence and integrity dimensions of the McKnight et al. (2002)' trusting belief scale (Table 20). Importantly this scale included an item that measured "perceived honesty" of the host ("I would characterize this host as honest") that was additionally used to test whether users perceive the explanations of the host (for example in the excuse or denial strategies) as truthful and honest. Being a substantial component of trust, perceptions of honesty could provide interesting implications in the context of our study.

Scales and Items	Mean	SD	Cronbach's alpha
Initial attitude to the apartment (partly based on Wang and Sun, 2010); *Scale: 1=strongly disagree, 6=strongly agree.*			
From what I see, …			
I like the room.	3.81	1.24	0.836
I think the room is worth considering.	4.11	1.24	
I could imagine staying in this room.	4.20	1.24	
Price-value relationship for the room meets my expectations.	3.47	1.18	
Trusting beliefs towards the host (based on McKnight et al. 2002); *Scale: 1=strongly disagree, 6=strongly agree.*			
I believe that this host would act in my best interest.	3.37	1.06	0.940
If I required help, this host would do its best to help me.	3.55	1.08	
This host is interested in my well-being, not just its own.	3.38	1.12	
I would characterize this host as honest.	3.54	1.04	
This host would keep its commitments.	3.47	1.02	
This host is sincere and genuine.	3.56	1.05	

Table 20. Operationalization of selected constructs and descriptive statistics

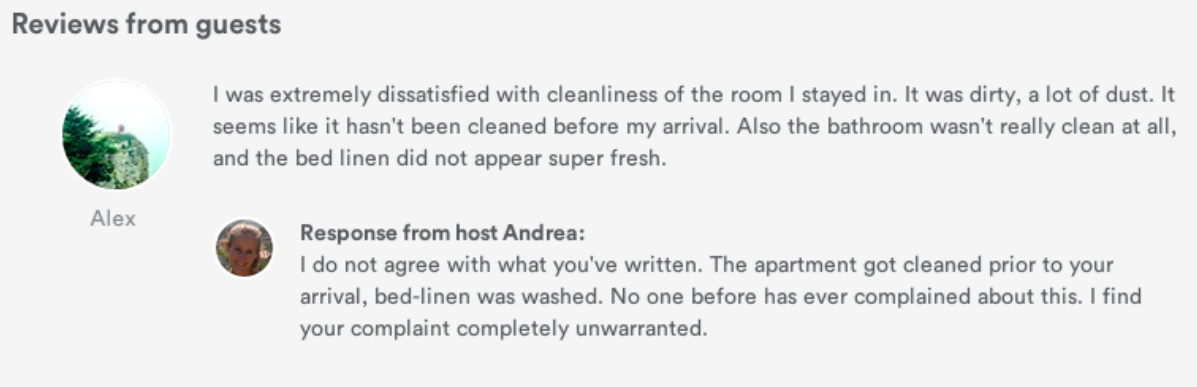

Figure 12. Example of experimental treatment ("high-control" context "cleanness" x strongly negative review x denial as a response strategy)

	Level of control x Negativity level of the review			
	Cleanliness (high control)		**Location (low control)**	
	strong negativity	moderate negativity	strong negativity	moderate negativity
	I was extremely dissatisfied with cleanliness of the room I stayed in. It was dirty, a lot of dust. It seems like it hasn't been cleaned before my arrival. Also the bathroom wasn't really clean at all, and the bed linen did not appear super fresh.	I was a bit dissatisfied with cleanliness of the room I stayed in. The room was ok but not sparkling clean, some dust here and there, I also found some hairs in the bathroom. It seems like it has been cleaned before my arrival, but it could have been done better. I also was not impressed by the bed linen – it seemed ok, but not "crispy" clean.	I was extremely dissatisfied with the location. The apartment is located really badly. It really bothered me that it is too far from the city center and any touristic attractions. Moreover, the connection to the city center by public transport is really bad – it took me very long to get to where I wanted.	I was a bit dissatisfied with the location of the apartment. The location of the apartment is ok, but not perfect. It is a bit far from the center and some touristic attractions. Also, the connection to the city center by public transport works, but could be better.
Response Strategies				
Confession/ Apology	I apologize that you have experienced your stay like this. I have paid close attention to your comments and I will do my best to make sure that the apartment is cleaned just before the arrival of the guest so that no one experiences anything like this again.		I apologize that you have experienced your stay like this. I have paid close attention to your comments and I will do my best to provide guests with a better and clear description how to easily reach the city center and all important sights so that no one experiences anything like this again.	
Excuse	Before your arrival I have hired a new cleaning lady, and she was responsible for keeping the apartment clean. I assume she has not cleaned the apartment properly enough. There was nothing I could have done about this situation.		Usually there is no problem with transportation and one can easily reach the city center by regular public transport. However, during your stay there were strikes in the Italian public transport company, which may have caused these problems. There was nothing I could have done about this situation.	
Denial	I do not agree with what you've written. The apartment got cleaned prior to your arrival, bed-linen was washed. No one before has ever complained about this. I find your complaint completely unwarranted.		I do not agree with what you've written. It is a good location and no one before complained about it. In fact, you can easily reach city center and sights by regular public transport. I find your complaint completely unwarranted.	
No response	No response provided		No response provided	

Table 21. Experimental conditions: 2 levels of review negativity x 2 levels of control x 4 response strategies

In step 4 (see Figure 11), control variables such as age, gender, income, experience as a guest, experience as a host on a peer-to-peer platform, amount of travel days with the need for housing

per year, and general propensity to trust based on McKnight et al. (2002b) were measured. Finally, a series of manipulation checks for strategies, review negativity and controllability of the issue were included (see section 5.3 for the exact formulations).

5.5.2 Sampling

Survey participants were recruited through the mailing list of a large German university in Fall 2014. As an incentive, 10 Amazon.de gift cards (5 Euro value) were raffled. A total of 545 respondents accessed our online survey, out of which 371 have completed it. Next, 3 observations with session duration less than 5 minutes were dropped. Finally, several observations did not pass one or several manipulation checks and, therefore, were also excluded: 33 participants who were assigned to the "strongly negative" review found it "not at all" negative; and 19 participants failed to identify the strategy of the host's response. Hence, a final net sample of 320 respondents was obtained.

71% of the respondents in our sample are female; 30% of participants had experience as a guest when using peer-to-peer accommodation services, but only 3.8% have tried themselves in the role of a host. Based on median values, an average respondent is 24 years old (mean =24.9) with an income of 600-800 Euro per month, and has spent most time of his or her life in Germany. The sample consists to 89% of students, 52.5% have completed secondary education and 32.81% already have a bachelor degree. The most popular fields of study among respondents are languages and culture (28.75%), economics (12.5%), law (4.4%), computer science (3.1%), mathematics (2.8%) and history (2.8%).

5.5.3 Results

Since responses for two contexts were evaluated independently, the effectiveness of random assignment across "high control" (cleanliness) and "low control" (location) treatments has been verified. Mann-Whitney tests revealed that the level of education ($z = -1.178$, Prob $>|z| = 0.2390$), study field ($z = 1.157$, Prob $>|z| = 0.2474$), occupational status ($z = 0.574$, Prob $>|z| = 0.5658$), income ($z = -0.535$, Prob $>|z| = 0.5926$), country of living ($z = -1.353$, Prob $>|z| = 0.1760$), gender ($z = -0.158$, Prob $>|z| = 0.8744$), Airbnb experience as a guest ($z = -1.124$, Prob $>|z| = 0.2609$) and as a host ($z = -0.498$, Prob $>|z| = 0.6185$) did not differ significantly across two contexts. Further, ANOVA tests have rendered no significant differences between respondents with respect to their initial attitude to the apartment (Prob $>F = 0.9290$), and trust

propensity (Prob >F=0.9290). Taken together, the random assignment of subjects to the "high control" and "low control" treatments can be deemed as effective.

To ensure the validity of further analysis, several manipulation checks were performed (Zikmund et al. 2012). First, to test the effectiveness of strategies' manipulation participants were asked to answer the following questions on a 6-point scale (1=not at all; 6= very much): "In the response to the review, the host tries to …deny that any issues exist" for the denial strategy; "… blame someone/something else for the situation" for the excuse; and "…apologize for the situation" for the confession / apology strategy. For those who were assigned into "no response" strategy, this question bloc was omitted. Because of the ordinary nature of dependent variable, non-parametric Kruskal-Wallis tests were per-formed. The results indicate statistically significant difference in answers between strategies for the denial (p = 0.0001); confession / apology (p = 0.0001) and excuse (p = 0.0001) conditions. Thus, for example, respondents assigned to the "denial" condition had stronger beliefs that the host was trying to "deny that any issues exist" than in other conditions. All in all, this suggests that participants perceived treatment condition correctly.

Next, participants' perception of the context controllability was verified with the help of two statements: "The cause of the incident was in the control of the host" and "The cause of the incident could have been prevented by the host", measured on a 6-point scale (1=strongly disagree, 6=strongly agree). Results of non-parametric Kruskal-Wallis test indicate that respondents perceived cleanliness issues to be more controllable (p = 0.0001) and preventable (p = 0.0001), suggesting the effectiveness of this manipulation.

Finally, the manipulation of review negativity was tested by asking on a 5-point scale whether the review was "not at all negative", "somewhat negative", "moderately negative", "very negative" or "extremely negative. Results yielded a significant effect of negativity manipulation (p = 0.0001). Taken together, respondents were able to distinguish between moderate and strongly negative review as well as between various strategies, and consider cleanliness issues to be more in host's control than location, suggesting that the relationships of interest could be further examined.

The results of Shapiro-Wilk W test did not reject that the dependent variable "trusting beliefs" is normally distributed for full sample (P >z =0.43410) and for both "Cleanliness" (P >z =0.62807) and "Location" (P >z = 0.98247) contexts. Hence, as part of the data exploration, t-tests were performed to determine if trust perceptions differ for each strategy, by checking each possible combination of responses for 2 contexts separately (see Table 22).

We found that in "high control" (cleanliness) context the response type of 'confession / apology' results in significantly higher levels of trusting beliefs (mean= 3.99) in comparison to all other response strategies. In contrast, in the "low control" (location) context, confession / apology leads to significantly higher levels of trust (mean=4.24) compared to no response (mean= 3.43) and denial (mean=3.30) strategies only. Interesting, however, in this "low control" context, confession / apology strategy is not significantly superior in terms of its impact on trust in comparison to excuse strategy (mean= 3.89).

Strategies		"High control"(cleanliness)			"Low control" (location)		
		t	df	Pr(|T| > |t|)	t	df	Pr(|T| > |t|)
confession /apology	no response	5.150	78	0.000	5.1791	69	0.000
	deny	3.358	75	0.001	5.8959	75	0.000
	excuse	5.724	82	0.000	1.884	75	0.063
no response	deny	1.500	83	0.138	-0.7718	72	0.443
	excuse	-1.472	90	0.145	2.4823	72	0.015
deny	excuse	2.701	87	0.008	-3.198	78	0.002

Table 22. Results of t-tests for pair-wise mean comparisons for trusting beliefs towards the host across 4 strategies in 2 contexts

Moreover, further testing confirmed that no significant differences exist for the average level of trust when no response is provided (mean=3.10) compared to any other response type, i.e. denial (mean=3.37) and excuse (mean=2.81), tested for the "high control" (cleanliness) condition. However, in the "low control" (location) treatment, trusting beliefs associated with the "no response" strategy are significantly lower than those based on excuse only, but not on denial. Finally, "denial" strategy (mean =3.37) produces a significantly higher level of trust than excuse in the "high control" scenario. Conversely, in the "low control" setting denial decreases the level of trust when compared to "excuse".

To evaluate the relative contribution of different strategies to trusting beliefs, OLS regressions were estimated for two corresponding contexts (see Table 23). We find that the review negativity influences trusting beliefs significantly only in the "high control" (cleanliness) context (β= -0.67, $p<0.001$) (H1 partly supported). In terms of strategies, confession significantly enhances trusting beliefs in the "high control" treatment (β= 0.98, $p<0.001$) and in "low control" treatment (β= 0.76, $p<0.001$) (H2 fully supported). At the same time, excuse has a positive significant influence only in the "low control" scenario (β=0.55, $p=0.001$) (H4 partly supported), while denial relates to trusting beliefs positively in the "high control" context (β=0.44, $p=0.014$) (H3 rejected, association in the reverse direction).

As an extension of our results, we additionally analyze the relationship between the strategies and the perception of the host as honest, thereby verifying if the respondents were "buying" the excuse or the denial presented by the host. Measured with the following statement: "I would characterize this host as honest" on a 6-point scale (1=strongly disagree; 6=strongly agree), this variable was transformed for the purpose of instantiation. Specifically, a binary variable was constructed that indicates whether a host was perceived as honest (4-6 points) or dishonest (1-3 points). To check for relationship between a type of response and belief in host's honesty Chi-square test was conducted revealing significant differences (Table 24).

Dependent Variable: Trusting Beliefs	"High control"(cleanliness), N=165		"Low control" (location),	
	Beta (β)	Beta	Beta (β)	Beta
Negativity of the review	**-0.67*** **	-0.35	-0.12	-0.08
Confession / Apology	**0.98*** **	0.42	**0.76*** **	0.4
Denial	**0.44** **	0.19	-0.08	-0.04
Excuse	-0.17	-0.08	**0.55*** **	0.3
Initial attitude to the apartment	**0.24*** **	0.27	**0.18*** **	0.21
Propensity to trust	0.01	0.01	**0.17** **	0.17
Airbnb experience as a guest	**-0.31** **	-0.15	0.15	0.09
Airbnb experience as a host	0.43	0.08	0.45	0.11
Income	0.04	0.11	0.01	0.02
Amount of travel with a need for housing	-0.05	-0.06	**-0.12** **	-0.18
Male	0.003	0.001	-0.02	-0.01
Age	-0.03*	-0.14	0.01	0.07
Country	0.16	0.05	0.12	0.04
	R-squared=0.4232		R-squared=0.3539	
	Adj R-squared= 0.3736		Adj R-squared=0.2892	

*Note: significant at *** <0.001; **<0.05; *<0.1 level.*

Table 23. Regression results with trusting beliefs towards the host as a dependent variable

As illustrated in Table 24 and Figure 13, when faced with apologetic response, the overwhelming majority of respondents (69% for "high control" treatment, 84% for "low control" treatment) consider a host to be honest. In the "high control" situation, the denial of a problem makes observers confused, so that half of respondents believe a host and another half does not. Furthermore, excuse strategy appears to be the worst regarding its effect on the perception of honesty in the "high control" setting, as only 25% of respondents agreed with the statement. This suggests that respondents were not "buying" the excuse in this setting. On the contrary, responding to complaints for events with "low controllability", excuse is interpreted as more plausible, with 70% of participants characterizing the host as honest in this scenario. On the other hand, denying an incident of "low controllability" does not appear to work for the benefit of the host, with 60% evaluating the host as "dishonest".

	"High control"(cleanliness)			"Low control" (location)		
	Perception of a host as "honest"			Perception of a host as "honest"		
Strategy	No	Yes	Total	No	Yes	Total
Confession / Apology	11 (31%)	25 (69%)	36	6 (16%)	31 (84%)	37
Denial	20 (49%)	21 (51%)	41	24 (60%)	16 (40%)	40
Excuse	36 (75%)	12 (25%)	48	12 (30%)	28 (70%)	40
No response	30 (68%)	14 (32%)	44	19 (56%)	15(44%)	34
Total	97	72	169	61	90	151
Chi-square test	Pearson chi2(3) =20.027 Pr = 0.000			Pearson chi2(3) =20.551 Pr = 0.000		

Table 24. Perception of a host as honest depending on the strategy in 2 contexts

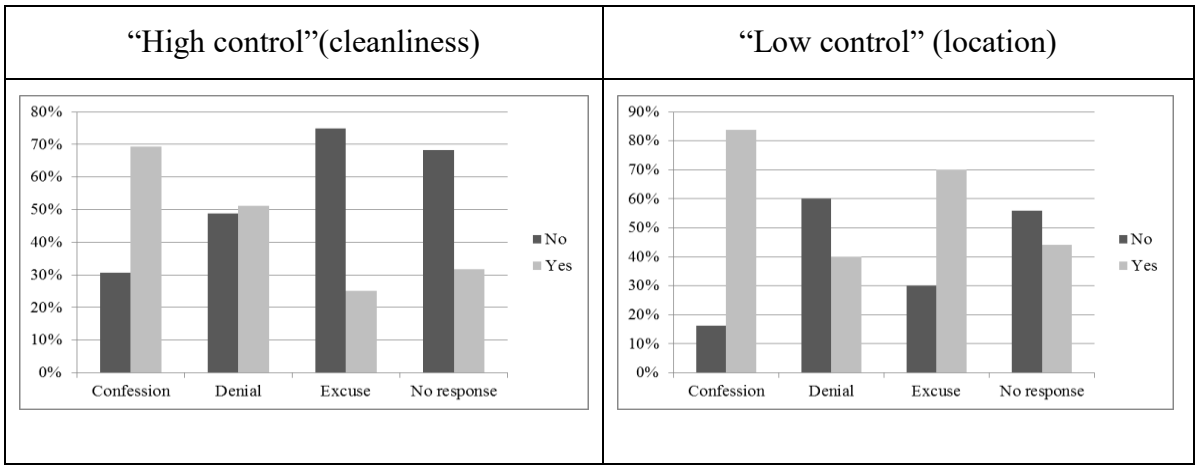

Figure 13. Perception of a host as honest for "high control" and "low control" treatments

5.6 Discussion and Managerial Implications

This study focused on trusting beliefs of potential consumers of the sharing economy, resulting in a number of interesting findings and potentially substantive implications for online communication activities. In the case of hospitality platforms like Airbnb or 9flats.com this approach may be especially relevant, since their functioning is rooted in the trust between a host and a guest (Lee and Song 2010, p.1079).

Contrary to the existing literature that reports significant influence of review negativity (Lee et al. 2008; Vermeulen and Seegers 2009), our study finds only partial support for this claim, providing evidence for the trust-damaging impact of higher review negativity only when the subject of criticism is controllable by a host ($b=-0.35$, $p<0.001$), e.g. cleanliness of a room, and revealing no significant impact in the case of non-controllable subjects like location. In other words, the degree of the review negativity does not matter in such scenarios: moderate and strongly negative reviews criticizing location were treated similarly with respect to trusting beliefs in our study.

Regression analysis showed that in order to enhance trusting beliefs of a potential customer who is intending to rent a room and faces a review that contains negative information about cleanliness, a confession/ apology or a deny strategy can work. According to standardized beta coefficients, the impact of confession strategy will be nearly twice higher than that of denial ($b=0.42$, $p<0.001$ vs. $b=0.19$, $p=0.014$), both compared to the case when complaint is left without any response. Taking into account the defensiveness of the deny response and that the attempt to promote a "no crisis" attitude may fail (Coombs 1998, 2006; Weiner 2000), a confession/ apology is still more advisable. At the same time, if the host applies the excuse strategy and blames others for the unclean room he rents out, no statistically significant effect on trusting beliefs is revealed ($p=0.305$), although the coefficient has a negative sign. One possible reason for this finding could be the fact that respondents perceive the situation in general as controllable by the host and do not believe in the excuse. Experience with peer-to-peer accommodation services and age negatively influences trust meaning that older and more experienced respondents are more suspicious towards the host.

However, when the subject of criticism is beyond the control of the host, e.g. location in our experiment, our analysis suggests that denial of the issue does not yield trust, while confession or excuse with attributing responsibility to a third party increases consumers' trust. Interestingly, the impact of confession strategy ($b=0.40$, $p<0.001$) is only a little higher than that of excuse ($b=0.30$, $p=0.001$). This strong positive effect of the excuse which is originally considered to be a defensive strategy (Coombs 1998, 2006) on trusting beliefs could be explained by the fact that when the situation is perceived as non-controllable by host, justifications about third parties fault are more readily accepted.

5.7 Limitations

Considering their preliminary nature, our findings should be interpreted with caution and are subject to several limitations. First, the sample size can be enlarged and diversified. Indeed, consisting mainly of students, opinions of other categories of population are not captured in our study. Second, in this study we have explored the impact of only four main response strategies, including a "no response" option. At the same time, as revealed in the pre-study, hosts may utilize a plethora of other strategies when responding to negative feedback and sometimes a combination of strategies is used within a response. Hence, future studies should explore mixed strategies when, for instance, a formal apology is present, but the responsibility is not admitted. Third, in our experiment all responses were written in a rather neutral tone. Considering recent

insights into the effects of discrete emotions, such as anxiety and anger, on the review helpfulness (Yin et al. 2014), one could suggest that a tone of the host's response, for example, more aggressive vs. neutral, might have an impact on consumer perceptions and decisions. Finally, our experiment presented only one review and one respective response to the respondent. In reality, consumers scan several reviews. As a result, the agreement or disagreement between reviewers can significantly influence their beliefs (Lee and Song 2010; Lee and Cranage 2012). Hence, future studies are advised to incorporate a "consensus" factor to extend the current research and to make the experimental setting more realistic.

6 Paper D: Impression Management in the Sharing Economy

Title

Impression Management in the Sharing Economy: Understanding the Effect of Response Strategy to Negative Reviews

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Abstract

Recognizing the harmful effect of negative reviews on the reputation of the hosts as well as a subjective nature of the travel experience judgments, accommodation sharing platforms, like Airbnb, have introduced the response option, empowering hosts with the voice to deny, present an excuse, or at least apologize for the subject of the criticism. However, the effects of different response strategies on the impression of guests regarding the host and, above all, guests' willingness to rent a specific accommodation in the sharing setting remain unclear. To fill this gap, this study focuses on understanding the impact of different response strategies utilizing experimental methods. Our investigation shows that when the subject of complaint is controllable by a host, only the "confession / apology" strategy can improve the impression of guests regarding the host and enhance guests' willingness to rent, compared to the absence of response. However, when the subject of criticism is beyond the control of the host, both "confession / apology" and "excuse" have positive influence on the impression and also guests' willingness to rent. At the same time, "denial" strategy appears ineffective in both controllable and uncontrollable contexts we tested.

Als Folge der schädlichen Effekte negativer Berichte auf den Ruf eines Gastgebers sowie der Subjektivität der Reiseberichte auf Peer-to-Peer Plattformen, wie Airbnb, wurde für die

Gastgeber eine Antwortoption eingeführt und damit die Möglichkeit auf den Kritikpunkt zu reagieren (ablehnend, rechtfertigend oder entschuldigend). Dennoch bleiben die Auswirkungen verschiedener Antwortstrategien des Gastgebers auf die Wahrnehmung potenzieller Gäste und deren Bereitschaft eine bestimmte Unterkunft zu mieten unklar. Um diese Forschungslücke zu füllen betrachtet diese Studie den Einfluss verschiedener Antwortstrategien im Rahmen eines experimentellen Versuchsaufbaus. Die Untersuchung zeigt, dass wenn die Beschwerde durch den Gastgeber kontrolliert werden kann, nur eine „Eingeständnis / Entschuldigung"-Antwortstrategie den Ruf des Gastgebers und die Bereitschaft bei diesem eine Unterkunft zu mieten verbessern kann, im Gegensatz zum Ausbleiben einer Antwort. Wenn jedoch der Gegenstand der Kritik außerhalb der Kontrolle des Gastgebers liegt, haben die Strategien „Eingeständnis / Entschuldigung" und "Rechfertigung / Ausrede" einen positiven Einfluss auf die Wahrnehmung des Gastgebers und auch auf die Bereitschaft zu mieten. Eine Antwortstrategie der "Ablehnung" ist in kontrollierbaren und unkontrollierbaren Kontexten unwirksam.

Keywords

Sharing Economy, Airbnb, Online Reviews, Response

6.1 Introduction

The revolutionizing accomplishments of the "sharing economy" that allows to enjoy the bonuses of possession without the burden of responsibility and significant monetary investments (Botsman and Rogers 2010; Hamari et al. 2013), have been particularly remarkable in the hospitality industry. Platforms like Airbnb, 9flats or Roomorama are transforming the industry landscape traditionally dominated by hotels. Particularly Airbnb has witnessed the most rampant growth since its launch in 2007, boasting 4 million guests, presence in 190+ countries and 300000 listings in 2013 alone (Airbnb 2014). However, while the idea of staying in cheaper (than hotels) private apartments when travelling has indisputable advantages, this concept is not without its challenges. Specifically, while hotels are subject to significant regulation with regard to their facilities, furnishing and additional services, as reflected in their star system, peer-to-peer platforms do not enjoy the same type of information transparency. Thus the guests are kept in ignorance of the quality and safety of the suggested offerings. As a result, host's reputation emerges as a centerpiece of these platforms, and is often seen as "the secret sauce" driving consumer decision making and the scaling of the online markets (Stewart 2014).

Hence, as a part of their reputation system, platforms like Airbnb offer users a plethora of reputation-enhancing cues, including offline ID verifications, links to social media accounts of hosts and guests, verified photos and videos of the apartments and their owners, as well as an online review system (e.g. Airbnb 2014). In this environment of cues and hints, particularly reviews represent an important component of reputation-building efforts, as they have been consistently shown to be the most influential factor in consumer decisions for online marketplaces characterized by information asymmetry (Chatterjee 2001; McKnight et al. 2002a, 2002b). However, while all types of reviews may affect consumer choices, particularly negative reviews draw potential guests' attention and are under their constant scrutiny (Bambauer-Sachse and Mangold 2011). This phenomenon is known as the negativity bias (Vaish et al. 2008).

Recognizing the potentially ruinous effect of negative reviews on the reputation of the other party as well as the subjective nature of the travel experience judgements, platforms, like Airbnb, have readily embraced the "response" option. It empowers the accused party with the voice to challenge, to deny or at least to apologize for the subject of complaint. Indeed, past research from the areas of crisis communication (e.g. Lee and Song 2010) and service failure / recovery management (e.g. Munzel et al. 2012) offers some evidence that not only a review but also a response (if available) works to form public opinion, with some response strategies being more beneficial than others (Lee and Song 2010).

Nonetheless, little is known about the effectiveness of response in peer-to-peer sharing settings in general and on apartment sharing platforms in particular, which may partly explain the limited use of this functional tool. Gaining an insight into this area is, however, of considerable importance, since these findings can provide actionable recommendations for hosts and guests in their private reputation management. Against this background, this study utilizes experimental methods to get the understanding of the impact of the review negativity and different response strategies on the impression of the host and willingness to make a deal in peer-to-peer accommodation sharing settings. As such, these findings may enrich a currently scarce body of research on how users interact with reputation-enhancing cues in the new "sharing economy"- a novel direction of the human-centered stream of Social Media research.

6.2 Related Work

While a variety of mechanisms work to reveal the reputation of the unknown party in online marketplaces characterized by information asymmetry, online reviews remain the most

prevalent and influential form for the assessment (Chatterjee 2001; McKnight et al. 2002a, 2002b). Presented as written evaluations of users' own experiences, reviews facilitate the selection of the best alternative as they guide consumer through the myriad of offers (Blal and Sturman 2014). Particularly in the hospitality industry, online reviews are extremely important, with users preferring feedback from other guests over the information posted by travel agencies (Chen and Xie 2008; Gretzel and Yoo 2008). However, while the impact of positive reviews is well-documented (Chevalier and Mayzlin 2006; Clemons et al. 2006), there is solid support for the special role of negative reviews in consumer decisions leveraged by the so-called "negativity bias" which is defined as "the propensity to attend to, learn from, and use negative information far more than positive information" (Vaish et.al. 2008, 383). Indeed, research confirms the unfavourable impact of negative online reviews on product attitude and, thereby, on purchasing intentions (Lee et al. 2008; Vermeulen and Seegers 2009), and, as a consequence, on sales (Liu 2006; Vermeulen and Seegers 2009) and revenue (Cabral and Hortaçsu 2010). Particularly for the apartment sharing platforms, like Airbnb or 9flats, the impact of negative reviews might be critical: since most feedback provided on these platforms is mostly positive, negative reviews stand out and, therefore, might be particularly scrutinized by the potential guests (Bambauer-Sachse and Mangold 2011; Park and Lee 2009). Hence, considering their potential significance, this paper focuses on the impact of the negative reviews in peer-to-peer accommodation sharing settings.

Recognizing the importance of reviews in ultimate consumer choices, online marketplaces increasingly empower the reviewed party with the "response" option, which may be used as a channel to challenge negative, unfair or otherwise undesirable feedback in the review systems. For example, such platforms as Airbnb, Yelp, and TripAdvisor do not only enable response function but also publish guidelines on how to respond to reviews. Also scholarly research provides some empirical evidence that not only reviews but also response and especially its specific type matter (Munzel et al. 2012). For example, the presence of an accommodative response to a negative review has been shown to have a greater favourable impact on consumers' evaluation of the company when compared to the defensive response or the absence thereof (Lee and Song 2010). However, despite the potential importance of response in the case of online review systems, research is this area still remains limited, with existing studies largely drawing on the evidence from related fields, such as crisis communication (e.g. Lee and Song 2010) and service failure / recovery management (e.g. Munzel et al. 2012).

In this context, the notion of the attribution of responsibility emerges as particularly relevant, coming across multiple studies on responses to negative eWOM (Lee and Song 2010), crisis communication (Coombs 1998, 2006) and service recovery/failure (Bitner 1990). Specifically, an unpleasant incident (the subject of the negative review) can be "attributed to external causes that are either uncontrollable ("The flight was delayed because of a blinding snowstorm") or controllable ("The personnel are poorly trained so that boarding takes forever"), with controllable causes being more detrimental (Weiner 2000, p. 384). Indeed, if individuals believe that the crisis situation was controllable, they will be more dissatisfied than in the case of non-controllable incidents (Bitner 1990). By offering an explanation to the incident, a company tries to alter attribution perceptions (Coombs and Holladay 1996). This is also relevant to the context of our study: negative online reviews are examples of expressed dissatisfaction and responses to negative reviews can be seen as attempts to provide explanations after a complaint. Discussing the role of attribution theory in consumer behaviour, Weiner (2000) identifies three strategies that a company can use for impression management after consumer has expressed product dissatisfaction, namely (1) denial, (2) excuse and (3) confession / apology. By relying on the (1) denial strategy a company is trying to refute the occurrence of any negative event. At the same time, the use of the (2) excuse strategy implies the provision of explanations about uncontrollable causes of the incident. Finally, (3) the confession/apology strategy presumes a pardon by an accused party and an offer of restitution. Considering the theoretical relevance, we concentrate our study on exploring the role of these three strategies for complaints with a high and a low degree of control by the accused party.

6.3 Methodology

6.3.1 Hypotheses

In order to find out the landscape of reviews and responses in the peer-to-peer accommodation sharing context, we conducted an exploratory study using private room listings from one popular peer-to-peer platform. Considering two popular touristic destinations, 82 listings in New York and 200 listings in Milan were singled out for further analysis and a total amount of 5708 reviews related to these listings were screened.

6.3.1.1 Negative Valence of the Review

Negative reviews are known for having a negative impact on consumers' attitudes (e.g. Lee et al. 2008). In the service failure context, the problem severity has been linked to the lower customer satisfaction and purchase intentions (Conlon and Murray 1996; Smith et al. 1999). Additionally, the judgment of responsibility may also be positively linked to the severity of the event (Coombs 2006; Lee 2005), thus worsening the image perceptions (Coombs 1998), impression and trust towards the organization (De Blasio and Veal 2009; Lee 2005). Similarly, in the peer-to-peer accommodation sharing settings, it is expected that strongly negative reviews will have a negative impact on the general impression of the host and the willingness to rent the room. For example, a negative review like: "I was disappointed that the photos provided did not represent the room that I was given. It was smaller, had bare walls, a small bookshelf, a nightstand, and a small table with a tiny desk chair" (Airbnb 2014) is unlikely to contribute positive impression of the host as it may imply a certain level of misrepresentation and, hence, dishonesty which damages the image (Goldstein 2015). All in all, we hypothesize that: *H1. Review negativity is negatively associated with the impression of the host (H1a) and the willingness to rent the room (H1b).*

6.3.1.2 Response Strategy: Confession / Apology

Various studies have shown the effectiveness of apologetic responses in terms of attitudes towards the company, as compared to other less accommodative strategies (e.g. Conlon and Murray 1996; Lee and Song 2010). For example, in the context of online complaints it has been demonstrated that accommodative responses, namely a combination of apology and compensation offer, result in more positive attitudes towards the company as opposed to defensive reaction or lack of response (Lee and Song 2010). This may be partly due to the special role of apology as it transmits "a good person committed a bad act" message to the consumers thus helping to soften a conflict situation (Weiner 2000, 386). Moreover, based on the empirical data, Munzel et al. (2012) suggest it is better to apologize even if the company is not responsible for the incident. Taken together, we argue that:

H2. Compared to the absence of response, apologetic response will have a positive impact on the impression of the host (H2a) and the willingness to rent the room (H2b).

6.3.1.3 Response Strategy: Denial

Based on our pre-study we observe that denial is a frequently used response strategy in the context of peer-to-peer accommodation sharing platforms. Hosts deny the existence of the issues either directly by expressing it through “I do not agree”, “It is not true” or indirectly by providing counter-arguments and showing the situation was different from how the guest described it. For example, one guest argued: “to let information not true, is never correct! my home is far from the metro station” ca granda " only 2/3 minutes walking, and not 10 minutes!” (Airbnb 2014). While some studies show a positive impact of this strategy in specific settings (e.g. Van Laer and de Ruyter 2010), there is a growing body of research refuting this view. For example, De Blasio and Veal (2009) find that denial results in lower scores of the impression of the organization, compared to excuse, no comment, apology and correction strategies. Moreover, Lee and Song (2010) show that exposure to the online critique coupled with a defensive response is more likely to lead observers to the conclusion that the company was responsible for the incident. In a complimentary finding, Lee (2005) reveals that by demonstrating responsibility with the help of the accepting response an organization is eventually blamed less for the crisis. Taken together we argue that:

H3: Compared to the absence of response, denial has a negative impact on the impression of the host (H3a) and the willingness to rent the room (H3b).

6.3.1.4 Response Strategy: Excuse

Using the excuse strategy, a company introduces uncontrollable causes of the event in question as an explanation for what has happened (Weiner 2000), thereby distancing itself from the responsibility for the incident or denying its own responsibility when shifting the blame to a third party (Coombs 2006; Garrett et al. 1989). As an excuse is aimed to limit perceptions of responsibility (Coombs 2006), and perceptions of responsibility are in turn negatively related to impression and trust to organization (De Blasio and Veal 2009; Lee 2005), one can assume that a successful excuse would also have a positive impact on impression perceptions in the context of peer-to-peer accommodation sharing platforms. For example, making use of this strategy in response to a complaint, one Airbnb host has argued: “"It's true, that Sunday the whole building was left without central heating for a few hours due to a breakdown of the heater, so it was quite cold!! Although it wasn't our fault, we felt very sorry...” (Airbnb 2014). In this case a plausible excuse that may work to limit the damage resulting from the negative feedback. Hence, we hypothesize that:

H4. Compared to the absence of response, excuse has a positive impact on the impression of the host (H4a) and the willingness to rent the room (H4b).

6.3.2 Experiment Design and Flow

To determine the impact of different response strategies on general impression and willingness to rent, laboratory 2 x 4 x 2 experiment was designed, in which review negativity (moderate vs. strongly negative), response strategy (confession/apology, denial, excuse, no response) and the context ("high control" vs. "low control") were manipulated. Considering a well-established role of control in interpreting complaints in such settings (Coombs 2007a, 2007b), the hypotheses were tested for two contexts that varied with regard to the controllability of the subject of complaint. Specifically, in the "high control" context a negative review about cleanliness of the room was provided. The "low control" context focused on the location of the apartment – a concern obviously beyond the influence of the host. Treatment conditions were formulated on the basis of existing reviews and responses of the actual guests and hosts collected in the pre-study, and were pre-tested with 16 subjects. Necessary adjustments to improve contrasts were made based on the elicited feedback.

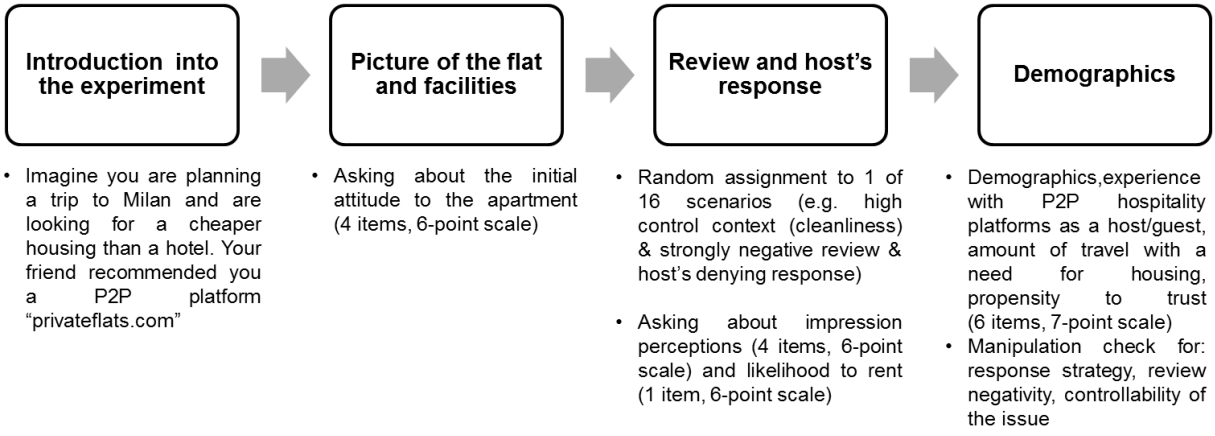

Figure 14. Workflow of the experiment

First, upon accessing the survey participants were asked to imagine that they were planning a weekend trip to Milan and were looking for a room in an apartment as a cheaper alternative to a hotel. A fake platform name "privateflats.com" was used to avoid any reputation bias of the existing market players (Figure 14).

In the second step, respondents were presented with a picture and a description of a room (including its key attributes) similar to the way it is done on Airbnb.com or 9flats.com. Price and other attributes were chosen on the basis of the pre-study for Milan, in which average levels

and the most frequent attributes of room description were derived. For example, our analysis has shown that 59% of all private room hosts in Milan in our pre-study sample are women, thus a female was presented as a host. To eliminate the effects of unusual spikes, the median price per night and per person (including service as well as a cleaning fee) among all listings was taken in the respective currency and comprised 56 Euro, since the study was subsequently conducted in Germany. Further, the icons "kitchen", "heating", "air-condition" and "essentials" (e.g. towels, bed linen, soap and toilet paper) were presented on the profile screen, since they were frequently mentioned amenities in our pre-study sample. The photos of the apartment were shot privately.

Presented with the picture of the accommodation, respondents were asked at once to express their initial attitude to the apartment (based on Barki and Hartwick 1994) by evaluating the following statements on a 6-point scale (1=strongly disagree, 6=strongly agree): I like the room; I think the room is worth considering; I could imagine staying in this room; Price-value relationship for the room meets my expectations. The attitude to the apartment was subsequently used as a control variable to account for a primary impression of the presented offer.

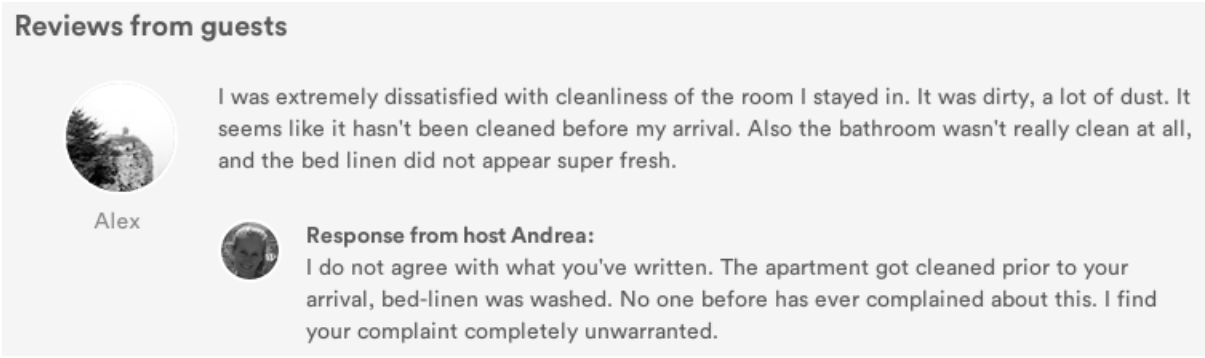

Figure 15. Example of experimental treatment
("high-control" context "cleanness" x strongly negative review x denial as a response strategy)

In the third step, participants were randomly assigned into one of 16 treatment conditions (2 contexts: 2 negativity levels x 4 response strategies), i.e. between-subjects design was employed (see Table 25 and an example in Figure 15).

Here, respondents had to assess their general impression of the host with 4 questions on a 6-point scale (1=strongly disagree, 6=strongly agree): My impression of the host is positive; I like the host; The host's overall image is favorable to me; I am enthusiastic about the host. Then and the willingness to rent the offered room was assessed by answering: "How likely are you

to rent the room from this host?" (scale: 1=very unlikely, 6= very likely). Finally, control variables were measured and manipulation checks were done.

	Level of control x Negativity level of the review			
	Cleanliness (high control)		**Location (low control)**	
	strong negativity	moderate negativity	strong negativity	moderate negativity
	I was extremely dissatisfied with cleanliness of the room I stayed in. It was dirty, a lot of dust. It seems like it hasn't been cleaned before my arrival. Also the bathroom wasn't really clean at all, and the bed linen did not appear super fresh.	I was a bit dissatisfied with cleanliness of the room I stayed in. The room was ok but not sparkling clean, some dust here and there, I also found some hairs in the bathroom. It seems like it has been cleaned before my arrival, but it could have been done better. I also was not impressed by the bed linen – it seemed ok, but not "crispy" clean.	I was extremely dissatisfied with the location. The apartment is located really badly. It really bothered me that it is too far from the city center and any touristic attractions. Moreover, the connection to the city center by public transport is really bad – it took me very long to get to where I wanted.	I was a bit dissatisfied with the location of the apartment. The location of the apartment is ok, but not perfect. It is a bit far from the center and some touristic attractions. Also, the connection to the city center by public transport works, but could be better.
Response Strategies				
Confession/ Apology	I apologize that you have experienced your stay like this. I have paid close attention to your comments and I will do my best to make sure that the apartment is cleaned just before the arrival of the guest so that no one experiences anything like this again.		I apologize that you have experienced your stay like this. I have paid close attention to your comments and I will do my best to provide guests with a better and clear description how to easily reach the city center and all important sights so that no one experiences anything like this again.	
Excuse	Before your arrival I have hired a new cleaning lady, and she was responsible for keeping the apartment clean. I assume she has not cleaned the apartment properly enough. There was nothing I could have done about this situation.		Usually there is no problem with transportation and one can easily reach the city center by regular public transport. However, during your stay there were strikes in the Italian public transport company, which may have caused these problems. There was nothing I could have done about this situation.	
Denial	I do not agree with what you've written. The apartment got cleaned prior to your arrival, bed-linen was washed. No one before has ever complained about this. I find your complaint completely unwarranted.		I do not agree with what you've written. It is a good location and no one before complained about it. In fact, you can easily reach city center and sights by regular public transport. I find your complaint completely unwarranted.	
No response	No response provided		No response provided	

Table 25. Experimental conditions: 2 levels of review negativity x 2 levels of control x 4 response strategies

6.3.3 Sampling

Survey participants were recruited through the mailing list of a large German university in Fall 2014. As an incentive, 10 Amazon.de gift cards (€ 5 value) were raffled. A total of 545 respondents accessed our online survey, out of which 371 have completed it. Next, 3 observations with session duration less than 5 minutes were dropped. Finally, several observations did not pass one or several manipulation checks and, therefore, were dropped: 33 participants who were assigned to the "strongly negative" review found it "not at all" negative; and 19 participants failed to identify the strategy of the host's response. Hence, a final net sample includes 320 respondents.

71% of the respondents in our sample are female; 30% of participants have claimed experience as a guest when using peer-to-peer accommodation services, but only 3.8% have tried

themselves in the role of a host. Based on median values, an average respondent is 24 years old with a monthly income of 600-800 Euro, and has spent most life time in Germany. The sample consists to 89% of students, 52.5% have completed secondary education and 32.81% already have a bachelor degree.

6.4 Results

To ensure the reliability of further analysis, we checked the random assignment of participants across two settings, their understanding of strategies, review negativity and controllability degree for each context. First, Mann-Whitney tests revealed that the level of education (z = -1.178, Prob >|z| =0.2390), study field (z = 1.157, Prob > |z| =0.2474), occupational status (z = 0.574,Prob >|z|=0.5658), income (z =-0.535, Prob >|z| =0.5926), country of living (z =-1.353, Prob > |z|=0.1760), gender (z =-0.158, Prob>|z|=0.8744), Airbnb experience as a guest (z =-1.124, Prob >|z|=0.2609) and as a host (z =-0.498, Prob >|z| =0.6185) did not differ significantly across "high control" (cleanliness) and "low control" (location) contexts. Further, no significant differences in initial attitude to the apartment (Prob >F=0.9290) and trust propensity (Prob >F=0.9290) have been found between participants, as suggested by ANOVA tests, thus confirming the effectiveness of the random assignment of subjects to the "high control" and "low control" treatments.

Second, to ensure the validity of received responses, several manipulation checks were performed (Zikmund et al. 2012). To test whether respondents discern different response strategies, they were asked to answer the following questions on a 6-point scale (1=not at all; 6= very much): "In the response to the review, the host tries to …deny that any issues exist" for the denial strategy; "… blame someone/something else for the situation" for the excuse; and "…apologize for the situation" for the confession / apology strategy. For those who were assigned into "no response" strategy, this question bloc was omitted. Non-parametric Kruskal-Wallis tests, relevant to the ordinary nature of dependent variable, indicated statistically significant difference in answers between strategies for the denial (p = 0.0001); confession / apology (p = 0.0001) and excuse (p = 0.0001) conditions. This means, for example, respondents assigned to the "denial" condition had stronger beliefs that the host was trying to "deny that any issues exist" than in other conditions. Taken together, this suggests that participants perceived treatment condition correctly. Next, to ensure participants perceive the controllability of events correctly, two statements were offered: "The cause of the incident was in the control of the host" and "The cause of the incident could have been prevented by the host", measured

on a 6-point scale (1=Strongly Disagree, 6=Strongly Agree). Results of non-parametric Kruskal-Wallis test indicate that respondents perceived cleanliness issues to be more controllable ($p = 0.0001$) and preventable ($p = 0.0001$), corroborating the effectiveness of this manipulation.

Finally, the manipulation of review negativity was tested by asking on a 5-point scale whether the review was "not at all negative", "somewhat negative", "moderately negative", "very negative" or "extremely negative. Results yielded a significant effect of negativity manipulation ($p = 0.0001$). Taken together, respondents were able to distinguish between moderate and strongly negative review as well as between various strategies, and consider cleanliness issues to be more in host's control than location, suggesting that the relationships of interest could be further examined.

To evaluate the relative contribution of different strategies to the impression of the host and willingness to rent a room, OLS regressions were estimated for two corresponding contexts (see Table 26, Table 27).

Dependent Variable: Impression of the host / Independent Variables	"High control" (cleanliness), N=165		"Low control" (location), N=144		Hypotheses
	Beta (β)	Beta stand. (b)	Beta (β)	Beta stand. (b)	
Negativity of the review (H1a)	**-0.56*** **	-0.29	-0.15	-0.08	Partly
Confession / Apology (H2a)	**0.72*** **	0.31	**0.84*** **	0.39	Supported
Denial (H3a)	0.24	0.11	-0.12	-0.06	Rejected
Excuse (H4a)	-0.10	-0.05	**0.56** **	0.27	Partly
Initial attitude to the apartment	**0.28*** **	0.32	**0.28*** **	0.29	
Propensity to trust	-0.04	-0.03	**0.18** **	0.16	
Airbnb experience as a guest	**-0.41** **	-0.19	0.01	0.01	
Airbnb experience as a host	0.36	0.07	0.41	0.09	
Income	0.06*	0.14	0.00	0.00	
Amount of travel with a need for housing	-0.04	-0.06	**-0.15** **	-0.20	
Male	0.17	0.08	0.09	0.05	
Age	-0.02	-0.09	0.03	0.13	
Country	0.12	0.03	-0.01	0.00	
	R-squared=0.3240		R-squared=0.3949		
	Adj R-squared= 0.2658		Adj R-squared=0.3344		

*Note: significant at *** <0.001; **<0.05; *<0.1 level*

Table 26. Regression results with impression of the host as a dependent variable

We find that the review negativity has a detrimental influence on the impression of the host ($\beta = -0.56$, $p<0.001$) and the willingness to rent a room ($\beta = -0.41$, $p<0.05$) only in the "high control" (cleanliness) context. In terms of strategies, confession / apology significantly enhances the impression of the host in both "high control" ($\beta = 0.72$, $p<0.001$) and "low control" treatments ($\beta = 0.84$, $p<0.001$), compared to the situation when no response is provided. Apologetic response also promotes the willingness to rent a room independent of the context, with $\beta = 0.57$,

p<0.05 for "high control" and β= 0.76, p<0.001 for "low control" scenarios. However, standardized betas suggest the contribution of confession / apology to the image perception after the "low control" event is slightly higher (b= 0.39) than in the "high control" context (b= 0.31). The same holds for the willingness to rent a room (b= 0.30 for "low control" and b=0.20 for "high control" treatment). Furthermore, excuse has a positive significant influence on the impression of the host (β= 0.56, p<0.05) and willingness to rent a room (β= 0.55, p<0.001) only in the "low control" scenario. For the "high control" context, no significant effect of the excuse strategy was found. Denial has no effect independent of the treatment.

Dependent Variable: Willingness to rent a room / Independent Variables	"High control" (cleanliness), N=165		"Low control" (location), N=144		Hypotheses
	Beta (β)	Beta stand. (b)	Beta (β)	Beta stand. (b)	
Negativity of the review (H1a)	**-0.41****	-0.17	-0.12	-0.0014	Partly
Confession / Apology (H2a)	**0.57****	0.20	**0.76*****	0.30	Supported
Denial (H3a)	0.28	0.10	-0.08	0.09	Rejected
Excuse (H4a)	-0.31	-0.12	**0.55*****	0.26	Partly
Initial attitude to the apartment	**0.59*****	0.54	**0.18*****	0.38	
Propensity to trust	0.00	0.00	**0.17****	0.15	
Airbnb experience as a guest	-0.34*	-0.13	0.15	-0.08	
Airbnb experience as a host	-0.03	0.00	0.45	-0.01	
Income	0.01	0.03	0.01	-0.04	
Amount of travel with a need for housing	-0.08	-0.08	**-0.12****	-0.15	
Male	0.10	0.04	-0.02	0.12	
Age	0.00	0.00	0.01	0.05	
Country	0.17	0.04	0.12	0.01	
	R-squared=0.4181		R-squared=0.3424		
	Adj R-squared= 0.3667		Adj R-squared=0.2762		

*Note: significant at *** <0.001; **<0.05; *<0.1 level*

Table 27. Regression results with willingness to rent a room as a dependent variable

As an extension of our results, we additionally analysed the average impression of the host and willingness to rent a room under different treatments. As illustrated in Figure 16, in case of the strongly negative review after controllable incident, excuse strategy with explanations about uncontrollable causes of the event results in the worst impression of the host (mean =2.18). In this case, the absence of response creates better opinion about the host (mean= 2.57). When the host denies the fact that undesirable event took place, respondents evaluate the host's reputation at 2.84, while apologetic response increases the average impression up to 3.18.

If the incident is beyond the host's control, the average impression of the room keeper is slightly higher for all response strategies, except denial. Interestingly, in case of low control blaming others for the incident seems to be effective and the average impression (mean = 3.44) is much higher than in high control scenario.

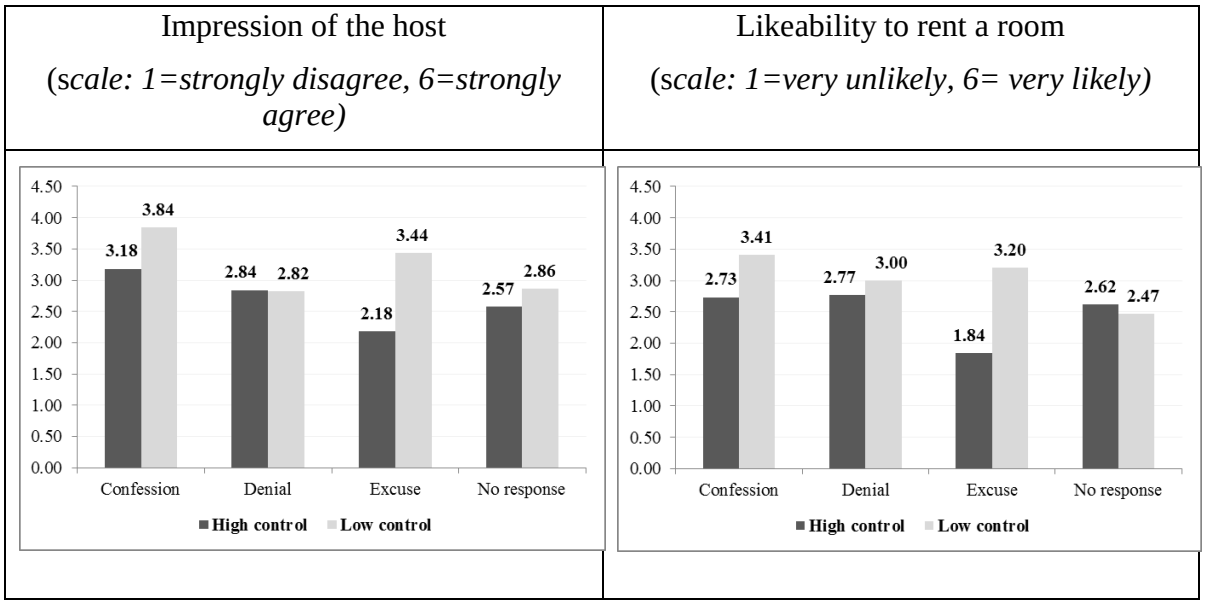

Figure 16. Mean values of impression of the host and likeability to rent a room when facing a strongly negative review and different response strategies

Regarding the likeability to rent a room, for the high control scenario confession (mean=2.73) or denial (2.77) strategy work out similarly. No response (mean=2.62) is the next best option, while in case of excuse signing the rent contract is very unlikely (mean=1.84). However, when it comes to the uncontrollable event, excuse strategy seems to be successful as the average likeability nearly doubles up to 3.20, while confession remains being the best solution (mean=3.41).

6.5 Discussion and Managerial Implications

This study focused on potential consumers (i.e. observers) of the sharing economy, on shaping their perceptions of the host's image and willingness to strike a bargain, resulted in a number of interesting findings and potentially substantive implications for online communication activities. In case of hospitality platforms like Airbnb or 9flats.com, where host's reputation appears to be a core transaction driver, this observer-oriented approach may be especially relevant, "considering the fact that an increasing number of potential consumers who have easy access to online complaints may be problematic to most companies" (Lee and Song 2010, 1079).

Contrary to the past research reporting the significant damaging influence of the review negativity on the product perception and buying intention (Lee et al. 2008; Vermeulen and Seegers 2009), our study finds only partial support for this, evidencing the review negativity detriments the impression of the host (β= -0.56, $p<0.001$) and the willingness to rent a room

(β= -0.41, $p<0.05$) only when the matter of complaint is controllable by the host, e.g. cleanliness of a room. When the reason of customer's dissatisfaction is not changeable by the host like location, no statistically significant impact is revealed. Possible reasons for that could be the fact that a customer roughly knows the location before booking and a host cannot improve it anyway. Therefore the tone of dissatisfaction is connected to the emotionality of the author of review, while in case of "cleanliness" higher review negativity may be attributed to higher severity of the problem.

Regression analysis suggests that for a potential customer who is intending to rent a room and faces review that contains negative information about cleanliness, writing an apologetic response may significantly improve the impression of the host and the willingness to make a deal, compared to no response option. Neither denial nor excuse is in this case better than ignoring the complaint. This implies that finding outside reasons for insufficient tidiness or denying the issue does not pay off as the majority of respondents do not find such behaviour convincing. Moreover, in the high control treatment, the significant influence of the "experience as a guest" is revealed on both the impression of the host (β = -0.41, $p<0.05$) and the willingness to rent a room (β = -0.34, $p<0.1$) suggesting that real participants of sharing economy are stricter and pickier customers.

When the subject of critic is hardly controllable by a host, e.g. location in our experiment, the analysis suggests that denial of the issue does not yield, while confession or excuse with attributing responsibility to a third party increases both dependent variables. However, the impact of the confession strategy is still higher compared to the excuse when forming judgement about the host (b=0.84 vs. 0.56) or expressing willingness to rent (b=0.76 vs. 0.55). This positive effect of the excuse which is originally considered to be a defensive strategy (Coombs 1998, 2006) could be explained by the fact that when the situation is perceived as non- or low- controllable by host, justifications about third party's fault are more readily accepted. Moreover, the credibility of an excuse can play a role, for instance in our study we had a strike in Italy as an excuse which sounds quite realistic.

Our findings have implications for IS practitioners including sharing economy participants, platforms and other affiliated stakeholders. Faced with a negative review, a service provider may neutralize it or turn to the own advantage. However, before responding one should first check whether the matter of complaint was controllable and avertible. If so, the only effective way to protect the image and purchase probability is to apologize for the incident. In case of an undesirable event beyond the service provider control both confession and excuse with

attributing responsibility to a third party will improve the impression and purchase probability, as compared to the absence of response.

6.6 Limitations and Opportunities for Future Research

The paper revealed the influence of the review negativity and response strategies in the online peer-to-peer complaint context. These findings, however, should be interpreted with caution. First of all, the sample characteristics and size can be enlarged. Second, the study checked for three main response types according to Weiner (2000).

Taken together, this paper paves a way for further studies in the field of impression and reputation management. Conducting a larger experiment may imply a more fine-grained classification of response strategies, e.g. proposed by Coombs (2006, 2007). Moreover, mixed strategies should be explored when, for instance, a formal apology is present, but the responsibility is not admitted. Based on the recent evidence that discrete emotions like anxiety and anger influences the perceived helpfulness of online reviews (Yin et.al. 2014) one may assume style, grammar and emotional tone of the review have significant implications to the brand image. Finally, future studies need to consider the effect of consensus or discrepancy between different reviews (Lee and Song 2010; Lee and Cranage 2012) and responses as well as the author's credibility.

7 Paper E: Does a Smile Open All Doors?

Title

Does a Smile Open All Doors? Understanding the Impact of Appearance Disclosure on Accommodation Sharing Platforms

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Abstract

Online photographs govern an individual's choices across a variety of contexts. In sharing arrangements, facial appearance has been shown to affect the desire to collaborate, interest to explore a listing, and even willingness to pay for a stay. Because of the ubiquity of online images and their influence on social attitudes, it seems crucial to be able to control these aspects. The present study examines the effect of different photographic self-disclosures on the provider's perceptions and willingness to accept a potential co-sharer. The findings from our experiment in the accommodation-sharing context suggest social attraction mediates the effect of photographic self-disclosures on willingness to host. Implications of the results for IS research and practitioners are discussed.

Keywords

sharing economy, self-disclosure, airbnb, social attraction, online photographs

7.1 Introduction

People often encounter situations in which they only have very little information about the individuals they are going to interact with (Walker and Vetter 1986). To handle such situations with a high level of uncertainty, interactants have been demonstrated to form first impressions swiftly (Bellew and Todorov 2007; Bar et al. 2006; Rule and Ambady 2008). Facial appearance is commonly the most prominent source of information in such moments and thus contributes substantially to spontaneous personality judgments (e.g. Willis and Todorov 2006). In the era of the ubiquitous Internet with online services gradually dislodging traditional offline transactions, a profile photo is often considered one's representative in the digital world (Photofeeler 2014).

This could not be truer than for peer-to-peer sharing platforms where users can offer or request sharing a resource: for instance, a place to stay (Airbnb, HomeAway), a parking place (ParkatmyHouse) or a trip (BlaBlaCar, Flinc). Whether referred to as the "access economy," "collaborative consumption," or "sharing economy," these kinds of platforms are anticipated to grow to more than $300 billion by 2025, from $14 billion in 2014 (Krisvoy 2017). In contrast to e-commerce which implies significant regulations for sellers and typically no personal interaction with the vendor for consumers, sharing economy transactions are often not subject to a strict procedure along with personal interaction and thus impose higher risks. As such, 52% of respondents cite personal safety as the most significant concern, and 58% of US and UK consumers believe risks of the sharing economy override its benefits (Lloyd's Innovation Report 2018). Hence, as part of their uncertainty-reducing strategy, platforms like Airbnb or BlaBlaCar request users to disclose personal information to the system and other peers to register, identify themselves or to allow the system to work as designed (Joinson et al. 2008). This, in turn, offers peers some visual cues they can rely on when deciding on whether to accept a sharing offer or not.

Providers' and consumers' photos on sharing economy platforms are assumed to satisfy the need for personal contact and social presence. Past studies proffered individuals are more willing to collaborate with and trust trustworthy-looking actors (Tingley 2014; Van't Wout and Sanfey 2008). At the same time, another stream of research reports different forms of discrimination taking place on sharing platforms, thus hinting at the backfiring effects of self-disclosure (e.g., Edelman et al. 2015; Cheng and Foley 2018). So far, there exists evidence on how the host's photos govern interest to explore a listing of prospective customers on Airbnb (Ert et al. 2016; Fagerstrøm et al. 2017). On the other hand, to start a sharing transaction, the

resolution is made by a host by confirming or declining a request. In this paper, we, therefore, take a host's perspective and report how consumer's photographic self-disclosure is a critical determinant of the provider's perception of social attractiveness and willingness to accept a potential co-sharer in the accommodation-sharing context (i.e., a guest). We define profile photographs as images on the peer-to-peer sharing platform used to represent one's physical appearance. The primary research question addressed in the present study is: what impact do different presentation strategies have on the host's decision to accept a request sent from a stranger? To answer this question, we build on the ecological theory of social perception which assumes that surrounding objects and environment offer affordances (e.g., danger, injury or pleasure) for a person or animal and therefore are needed to be perceived (McArthur and Baron 1983).

The remainder of the paper is organized as follows. In the following section, we summarize related work and derive hypotheses that link photographic self-disclosure strategies with the social attractiveness and the probability to be accepted as a guest. Next, the methodology and results of the empirical study are presented. Implications of our findings for IS research and practitioners are discussed in the concluding part.

7.2 Related Work

The ecological approach to social perception, rooted in Gibson's theory of object perception (Gibson 1979), suggests that the physical appearance reveals structural invariants specific to a person such as ability and character. As such, people's faces give adaptive information about the social interactions they afford. In most cases, the 'cute' baby appearance calls for approach and protective responses (Berry and McArthur 1986; Zebrowitz 1997); an angry expression evokes protective responses and aversion (Balaban 2014; Marsh et al. 2005). Recent studies evidenced the temptation to judge strangers by their faces is hard to resist across a variety of contexts and disciplines such as marketing (Derbaix and Bree 1997; Small and Verrochi 2009;Tanner and Maeng 2012; Gabbott and Hogg 2000), psychology (Krämer and Winter 2008; Niedenthal et al. 2001; Tracy and Robins 2004), neuroscience (Lee et al. 2002; Critchley et al. 2000) and information systems (Ert et al. 2016; Fagerstrøm et al. 2017; Cyr et al. 2009; Liu et al. 2016; Bakhshi et al. 2014; Siibak 2006). Previous studies contend that participants are more willing to collaborate and trust actors with trustworthy-looking faces (Tingley 2014; Van't Wout and Sanfey 2008). Surprisingly, sometimes a look overshadows reputation: in an experiment, people were willing to invest more money in a person with a better-looking photo regardless of their good or bad credit history (Rezlescu et al. 2012).

In sharing settings, with research mainly focused on the consumer‘s perspective, personal images appear to govern their choices considerably. For instance, potential guests are willing to pay more for listings posted by a trustworthy-looking host (Ert el al. 2016). Hosts' photos with positive or neutral facial expressions yield interest towards a web page and increase the likelihood to rent in a peer-to-peer marketplace (Fagerstrøm et al. 2017). A negative facial expression or an absence of a photo (default head silhouette) decreases the interest to explore an Airbnb web page and the booking probability. Multiple records of racial and other discrimination on sharing platforms also allude to the impact of appearance on judgments (Edelman et al. 2015; Cheng and Foley 2018). Recognizing the priority of consumer's interest and initiative in a deal, it is the host who makes the final decision by accepting or rejecting a request. Considering the peer-to-peer nature of sharing transaction, we assume the previous findings also apply when it comes to the host's decisions regarding a potential guest. Taken together, we hypothesize:

H1: the guest's photographic self-disclosure strategy has an impact on the host's willingness to accept a guest.

The positive effect of the appearance is often attributed to attractiveness perceptions or in other words, a consequence of relying on "what is beautiful is good" heuristic when evaluating an unknown person. The so-called "beauty/attractiveness premium" suggests that good-looking individuals are assumed to own other unrelated positive features as a result of their attractiveness (e.g. Eagly et al. 1991). For instance, deciding on a new employee, attractive job applicants were preferred over unattractive applicants (Dipboye et al. 1977; Miller and Routh 1985). Furthermore, attractive individuals have been scored as more persuasive communicators than unattractive counterparts (Snyder and Rothbart 1971), receive better offers for starting salary (Jackson 1983), better performance evaluations (Drogosz and Levy 1996), better ratings for admission to academic programs (Drogosz and Levy 1996), better offers when bargaining (Solnick and Schweitzer 1999), and even more favorable judgments in trials (Castellow et al. 1990).

The examples above do not count on beauty similar to one of the advertising models but instead refer to social (interpersonal) attractiveness that can be defined as "a motivational state in which a person is predisposed to think, feel, and usually behave positively toward another person" (Simpson and Harris 1994). Given its complex nature, social (interpersonal) attractiveness is theorized to have three components: 1) task attraction, reflecting willingness to work with

someone to accomplish goals 2) social (relational) attraction, meaning the desire to "hang out" with someone 3) physical attraction, when we like how people look.

In the sharing economy context, the social component is given particular importance. In contrast to e-commerce, here a provider and a consumer both cooperate to share a resource temporally. Therefore, compatibility and mutual attraction determine, to a large extent, how enjoyable their joint consumption will be. Prior research substantiates social motive to be one of the most important factors when deciding whether to use a sharing economy service or not (Hamari et al. 2016; Balck and Cracau 2015; Hawlitschek et al. 2018). Given that, we assume:

H2: the relationship between guest's photographic self-disclosure strategy and host's willingness to accept is mediated by social attractiveness.

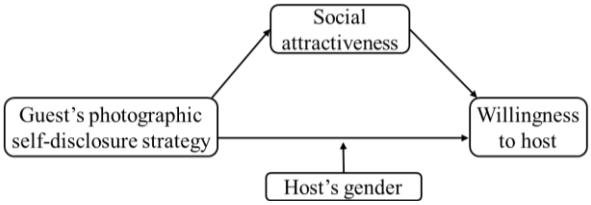


Figure 17. The research model of the study

In the literature, it is well cited that women better detect emotions in nonverbal communication (Hall et al. 2000; Hall and Matsumoto 2005; Hoffmann et al. 2010). Females report more accurate judgments, even when only subtle facial cues of emotion are present (Hoffmann et al. 2010). On sharing economy platforms, women demonstrated a stronger reaction to positive and negative facial stimuli (Fagerstrøm et al. 2017). From this discussion, we hypothesize: *H3: the impact of photographic self-disclosure on willingness to host is stronger for female hosts than for male hosts.*

7.3 Methodology

7.3.1 Experiment design and flow

To determine the impact of different guest's photographic self-disclosure strategies on willingness to host, a 2 x 4 experiment was designed, where the applicant's photo and the guest's gender (male vs. female) were manipulated. The methodological approach was inspired by the PhotoFeeler study (Photofeeler 2014) where different characteristics of profile photos were examined. Hence, in our study pictures with dark editing, people wearing sunglasses and

zoomed-in pictures showing only part of the face combined with a serious look were included. Finally, as a contrast condition, pictures with smiling (laughing) persons were tested.

In order to understand the landscape of guests' profiles, 50 guest profiles who sent a request for a real private room listing in Berlin via the Airbnb platform (Airbnb 2018) were screened. Treatment conditions were formulated based on this exploration and were pre-tested with two subjects. The photos were shot privately. Necessary adjustments to improve contrasts were made based on the elicited feedback (Table 28).

After accessing the survey (step 1), participants were first asked to imagine that they have a spare room they would like to rent out at one of the peer-to-peer sharing platforms like Airbnb, 9flats or Wimdu. The exact accommodation platform was not specified on purpose to eliminate the effect of the reputation bias of the existing companies. Respondents were presented with the sample picture of a room to better plunge into a scenario. The photos of the apartment were shot privately and represent a real Airbnb listing[10]. According to the introduction scenario, the respondent's host account was set up on the platform, and luckily, there were already a few requests from people who wanted to rent this free room.

In step 2, participants were randomly assigned to one of 4 treatment conditions with male guests (smiling, serious with sunglasses, serious zoomed-in, and serious dark-edited). They were presented with the profile of a potential guest, including a picture and a description text similar to the way it is done on Airbnb.com or 9flats.com. Guest's attributes were chosen premised on our exploration of existing profiles. The section "About me" was filled with the neutral text "Hi! I am Christian/Julie, a student from Hannover, Germany. And I love to travel!" Membership was set to "since January 2016", occupation to "student." Further, the icons "verified e-mail address" and "verified phone number" were presented in the profile since they were frequently present attributes (88% and 96% of cases, correspondingly) in our pre-study sample. Upon viewing the profile of the potential guest, respondents had to express their willingness to host this person by answering "Would you host this person?" on a 7-point Likert scale (1=strongly agree, 7= strongly disagree). Social attractiveness scale was based on (Simpson and Harris 1994) and included the following four items: 1) "How likely is it that this person could be a friend of yours?" 2) "Do you trust this person?" 3) "Do you think this person

[10] Pictures of a real Airbnb listing of one of the researchers.

is likable?" 4) "Do you think this person is reliable?" (7-point Likert scale (1=strongly agree, 7= strongly disagree).

Table 28. Treatment conditions

In step 3, respondents were randomly assigned to one of 4 treatment conditions with a female guest and evaluated her profile with the same questions as in step 2.

In step 4, control variables such as age, respondent's gender, income, experience as a guest, experience as a host, income from renting out on sharing platforms per year, the importance of particular guest's characteristics and general propensity to trust based on (McKnight et al. 2002) were measured. The latter was operationalized with the following items: 1) "In general people care about the well-being of others"; 2) "Most people are concerned about other people's problems"; 3) "In general people are helpful and do not only care about their own needs"; 4) "Most people keep their promises"; 5) "Many people try to support their words with actions"; 6) "Most people are honest" with answers on a 7-point Likert scale (1=strongly agree, 7= strongly disagree).

7.3.2 Sampling and sample characteristics

Survey participants were recruited through the various social media channels like Facebook timeline posts, Facebook group posts, Airbnb host groups, Couchsurfing groups, LinkedIn and Xing posts. No remuneration was claimed. A total of 650 respondents accessed the online survey, out of which 270 have completed it.

The survey was offered in English and German; 41% selected English, 59% German. 58% of all participants currently live in Germany, 6% in the US. Another 14% of all participants live in Europe (w/o Germany) and 19% in other non-European countries (w/o US). 36.7% (n=99) of the respondents in the sample are male, 58.5% female (n=158), 1.1% (n=3) other, and 3.7% (n=10) did not specify. The average participant is 26 years old based on a median value (mean=26.5). Half of all participants are students, 30% hold a university entrance diploma (Abitur), 33% a bachelor's degree and 24% a master's degree.

34% (n=91) of the participants have used a sharing accommodation platform as a guest, and 26% (n=69) hosted other people. According to the self-reported numbers, the median number of previous stays by an experienced guest is 3, and the mean value is 6. Among those who hosted strangers, the median number of visits equals 10, and the mean is 54, hinting at the regular renting-out practice on a sharing platform in our sample. For 25 hosts, the profit gained through a platform is a part of the regular income. If participants make money via a sharing (n=25) they earn on average €587 per month; 35% of them obtain less than €100, 46% bring in between €100 and €1000, 10% gain between €1000 and €2000 and another 10% even more than €2000. Most of the participants (75%) have made no bad experiences with hosting guests on a sharing platform so far, 11% encountered unpleasant situations once, 13% a few times and 2% several times. 85% of respondents (n=230) are open to hosting both male and female travelers, while 14% (n=37) host only females and about 1% (n=3) accept only male guests.

The overwhelming majority of respondents express the importance of neatness (94.8%, n=255) when the guest leaves everything clean and tidy behind. 65% (n=173) pointed out the significance of interaction (e.g., conversations, activities). Having the same hobbies and interests is not a must: 36.6% of respondents expressed the importance of this factor, for 39.9% it is rather unimportant while 23.5% are indifferent to this factor.

Regarding the guest's profile characteristics, hosts in our sample believe the profile picture to be the most essential attribute (88% expressed as "very important", "important" or "rather important") followed by text description (88%), reviews from past trips (85.7%) and a verified e-mail address (82.8%). Link to SNS account and information about school/work seem not to influence hosts' decision. These attributes count for 44.9% and 41.4% respectively, while roughly the same share of respondents believe these are insignificant (35.2% and 38.7% respectively) or are indifferent (19.9% for both cases).

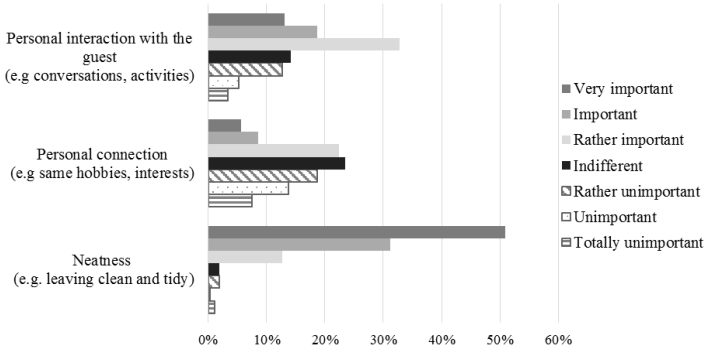


Figure 18. The importance of guests' characteristics

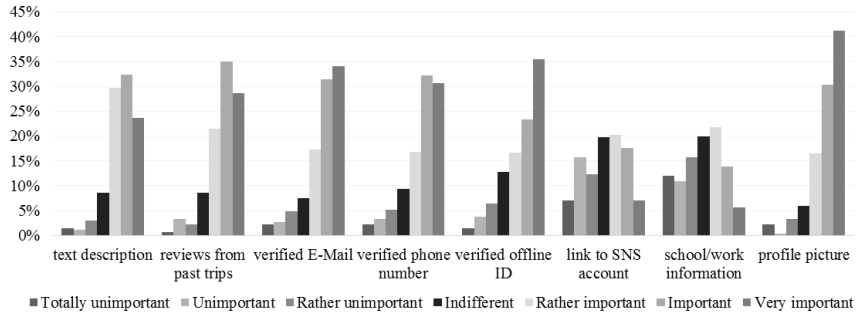


Figure 19. The importance of guests' informational cues

To ensure the effectiveness of manipulation, we primarily relied on behavioral measures. First, the survey was designed as interesting and compact as possible. The pre-tested and declared length was 5 min, the actual mean duration comprised 8.1 min (SD=4 min 24 sec). The main questions were asked at the beginning of the survey. Second, the image changes were performed either technically (e.g., dark editing -80%, zooming in from a bust to a face-only close-up) or maintain a high degree of objectivity (e.g., presence or absence of sunglasses). As advocated by Hauser et al. (2018), behavioral measures together with pilot testing are less problematic than a prototypical manipulation check that severely intervenes the procedure.

7.4 Results

Effects on willingness to host. A two-way ANOVA revealed a main effect of guest's photographic disclosure on willingness to host for a female guest ($F(3, 255) = 15.52$, $p < .001$) and a male guest ($F(3, 258) = 11.41$, $p < .001$) sample. Our primary prediction (H1) was supported: People in the different self-disclosure conditions reported various willingness to accept the potential guest. The main effect of the respondent's gender (female guest: $F(1, 255) = 0.196$, $p = 0.658$; male guest: $F(1, 258) = 0.30$, $p < 0.862$) and the interaction effect (female guest: $F(3, 255) = 0.130$, $p = 0.942$; male guest: $F(3, 258) = 0.800$, $p = 0.495$) were not significant. Thus, H3 cannot be confirmed.

Pairwise comparison with the Tukey's multiple comparison test (Table 29) elaborates on the effects of each strategy. As expected, a photo with a smiling person significantly outperforms any other strategy. When confronted with a female guest, a dark photo was preferred over one with sunglasses ($M^{dark} - M^{sunglasses} = 0.7$, $p=0.049$), while for a male guest the difference was not statistically significant ($M^{dark} - M^{sunglasses} = 0.13$, $p=0.970$). Regardless of the guest's gender, contrasting a dark photo with a zoomed-in photo does not yield significant differences in the

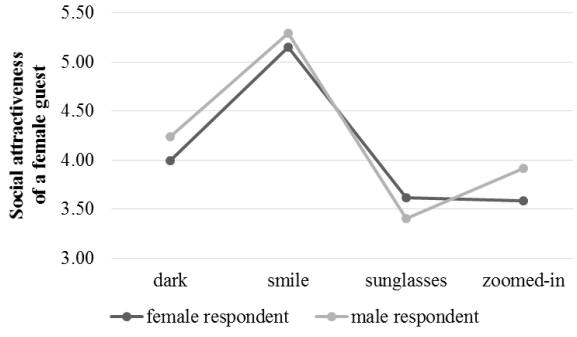
willingness to accept. The same is true when matching a zoomed-in image vs. a face covered with sunglasses.

		Female guest sample (n=256)		Male guest sample (n=259)	
(I) strategy	(J) strategy	Mean diff. (I-J)	SE	Mean diff. (I-J)	SE
dark	smile	-0.88*	0.27	-1.00*	0.29
	sunglasses	0.70*	0.27	0.13	0.28
	zoomed-in	0.56	0.28	0.61	0.28
smile	dark	0.88*	0.27	1.00*	0.29
	sunglasses	1.58*	0.25	1.13*	0.28
	zoomed-in	1.44*	0.27	1.61*	0.28
sunglasses	dark	-0.70*	0.27	-0.13	0.28
	smile	-1.58*	0.25	-1.13*	0.28
	zoomed-in	-0.14	0.26	0.48	0.27
zoomed-in	dark	-0.56	0.28	-0.61	0.28
	smile	-1.44*	0.27	-1.61*	0.28
	sunglasses	0.14	0.26	-0.48	0.27

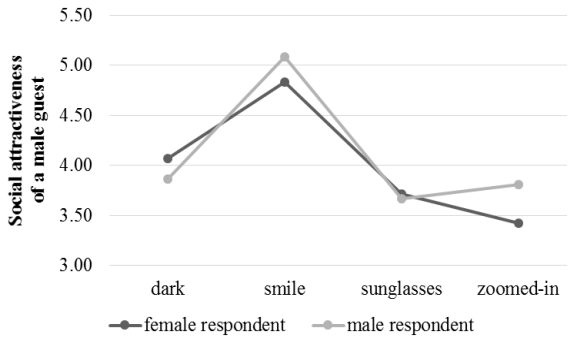
Mean diff. – mean difference; SE- standard error. * - the mean difference is significant at the 0.05 level.

Table 29. Multiple comparisons of photographic self-disclosure with Tukey's test

Social attractiveness. Next, we evaluated the impact of guest's photographic self-disclosure on participants' perception of social attractiveness while they viewed the profile. Principal components analysis revealed that all items for the construct "Social attractiveness" loaded onto a single factor (Cronbach's Alpha = 0.92); thus, we created an average score of the four items, and we refer to it simply as "social attractiveness" for the preliminary analysis. A two-way ANOVA with social attractiveness as the dependent variable revealed a main effect of photographic self-disclosure for a female guest ($F(3, 252) = 27.045$, $p < 0.001$) and a male guest ($F(3, 255) = 15.379$, $p < 0.001$) sample. Participants perceived a smiling applicant as more socially attractive (female guest: $M^{smile} = 5.22$, $SD = 0.15$; male guest: $M^{smile}=4.96$, $SD=0.16$) as compared to a dark face (female guest: $M^{dark} = 4.11$, $SD = 0.17$; male guest: $M^{dark}=3.97$, $SD=0.16$), a face covered with sunglasses (female guest: $M^{sunglasses} = 3.51$, $SD = 0.14$; male guest: $M^{sunglasses}=3.69$, $SD=0.15$) or a zoomed-in image (female guest: $M^{zoomed\text{-}in} = 3.75$, $SD = 0.16$; male guest: $M^{zoomed\text{-}in}=3.61$, $SD=0.15$). The main effect of the respondent's gender (female guest: $F(1, 254) =0.652$, $p = 0.420$; male guest: $F(1, 257) = 0.381$, $p = 0.538$) and the interaction effect (female guest: $F(3, 252) =0.663$, $p = 0.576$; male guest: $F(3, 255) = 0.782$, $p = 0.505$) were not significant. Although the lines in Figure 20 intersect, the p-values suggest a model with interaction is not required to describe the main patterns in the data.



4. A. Female guest treatment



4.B. Male guest treatment

Figure 20. Perception of social attractiveness for different self-disclosures

Mediation analysis. Next, we tested whether the perception of social attractiveness mediates the effects on willingness to host. At this stage, the partial least squares (PLS) approach was chosen as a method to analyze non-normally distributed data with the limited sample size (Fornell and Larcker 1981). According to the Shapiro-Wilk W test, the distribution of the dependent variable „Willingness to host" significantly deviates from a normal one for both male guest sample (P>z=0.00072) and female guest sample (P>z=0.00015). Moreover, "Social attractiveness" and "Propensity to trust" were initially measured as constructs with multiple items. SmartPLS 3.2.8 software was used (Ringle et al. 2015) for the evaluation of the research model.

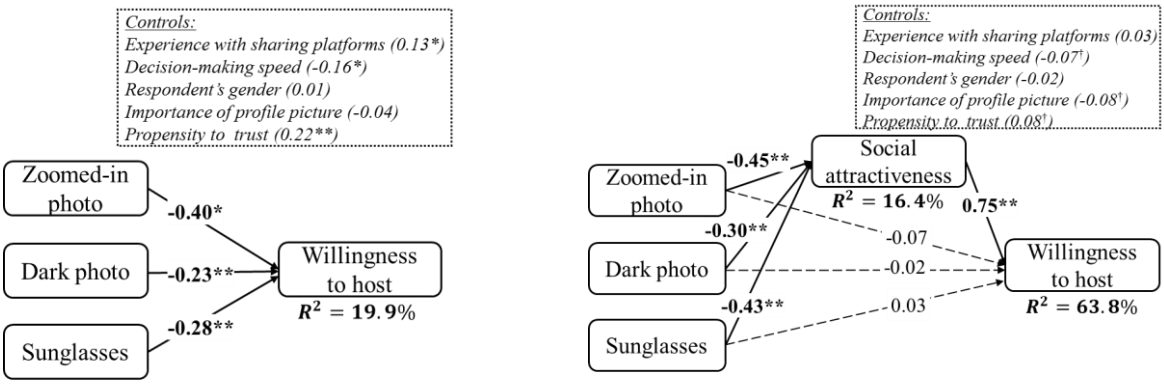
Model	Construct	AVE		Composite Reliability		CA
		Dir.	Med.	Dir.	Med.	
Willingness to host a male guest	Social attractiveness	n.e.	0.77	n.e.	0.93	0.90
	Propensity to trust	0.58		0.89		0.86
Willingness to host a female guest	Social attractiveness	n.e.	0.84	n.e.	0.95	0.94
	Propensity to trust	0.58		0.89		0.86
n.e. – not estimated in this model; Dir.-direct model; Med.-model with a mediator						

Table 30. Quality Criteria of Constructs

The Measurement Model (MM) was evaluated by verifying the criteria for Convergent Validity (CV) and Discriminant Validity (DV). To ensure CV, parameters for Indicator Reliability (IR), Composite Reliability (CR) and Average Variance Extracted (AVE) were assessed. For IR, constructs should explain at least 50% of the variance of their respective indicators. Items with factor loadings below 0.4 should be removed from the model (Homburg and Giering 1996). All items in both models satisfied the criteria stated above, with loadings exceeding the threshold of 0.7 (Hulland 1999); IR was assured. CR values for all constructs were higher than the required level of 0.7, as shown in Table 30. The AVE values for all measured constructs also satisfy the necessary criteria (AVE>0.5) (Fornell and Larcker 1981). Finally, Cronbach's alpha

(CA), a measure of Internal Consistency of construct scales, was higher than the required threshold of 0.7 for all constructs (Nunnally 1978). Taken together, CV can be assumed. Next, DV was assessed by ensuring that the square root of AVE for each construct was higher than the correlation between this construct and any other construct in the model (Hulland 1999). This requirement was fulfilled for all constructs in our model. Taken together, we assume our MM to be well-specified.

Structural Model (SM) was evaluated for both male and female guests. The endogenous variable in all models is the willingness to host a guest, whereas the exogenous ones are the self-disclosure strategies and, in the mediated models, the social attractiveness. The significance of the path coefficients was established based on a bootstrapping procedure. In general, we pursued the approach Baron and Kenny (1986) advocate. First, the direct impact of self-disclosure strategies on willingness to host was tested. As shown in Figure 21(model 21.A), path coefficients of the self-disclosure strategies (for male guests: $b^{zoomed\text{-}in}$ = -0.4**; b^{dark}=-0.23**; $b^{sunglasses}$ =-0.28**; for female guests: $b^{zoomed\text{-}in}$ = -0.4**; b^{dark}=-0.23**; $b^{sunglasses}$ =-0.43**) were significant in predicting willingness to host (H1 is confirmed). The R^2 is about 20% for both cases, indicating an acceptable level of explanatory power of the model (Falk and Miller 1992). Effect sizes (f^2) for the impact of self-disclosure strategy were small (for male guests: $f^{2\ zoomed\text{-}in}$ = 0.127; $f^{2\ dark}$=0.042; $f^{2\ sunglasses}$ =0.061; for female guests: $f^{2\ zoomed\text{-}in}$ = 0.138; $f^{2\ dark}$=0.046; $f^{2\ sunglasses}$ =0.153).



21.A. Direct effect

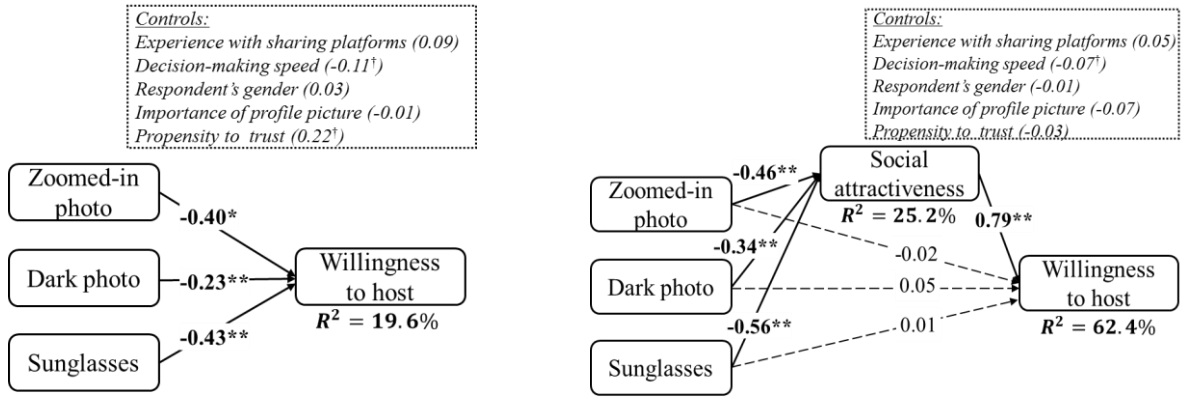
21.B. Model with a mediator

significance: ** at 1% or lower, * at 5%; † at 10%

Figure 21. Mediation analysis for male guests

Second, the mediation effect of social attractiveness was assessed. One can assume mediation in the relationship between self-disclosure strategies and willingness to host if the two links were significant: 1) between a self-disclosure strategy and a mediator; and 2) between a

mediator and willingness to host. The variance of willingness to host explained in the mediated model is now much higher (R^2 = 63.8% for male guests and R^2 = 62.4% for female guests). Furthermore, the direct links from disclosure strategies to willingness to host become insignificant (for male guests: $b^{zoomed\text{-}in}$ = -0.07; b^{dark}=-0.02; $b^{sunglasses}$ =0.03; for female guests: $b^{zoomed\text{-}in}$ = -0.02; b^{dark}=0.05; $b^{sunglasses}$ =0.01) once social attractiveness is included. For the model with mediation, the effect sizes for the impact of self-disclosure on social attractiveness are medium (for male guests: $f^{2\ zoomed\text{-}in}$ = 0.160; for female guests: $f^{2\ zoomed\text{-}in}$ = 0.204; $f^{2\ sunglasses}$ =0.288) and small (for male guests: $f^{2\ dark}$=0.073; $f^{2\ sunglasses}$ =0.139; for female guests: $f^{2\ dark}$=0.110). Effect sizes for the impact of social attractiveness on willingness to host are large (for male guests: f^2=1.210; for female guests: f^2=1.139).



22.A. Direct effect

22.B. Model with a mediator

significance: ** at 1% or lower, * at 5%; † at 10%

Figure 22. Mediation analysis for female guests

We followed (Preacher and Hayes 2004; 2008), and because the direct effect (path "disclosure strategy – willingness to host," Figure 21, Figure 22, model 21.A, 22.A) was significant, we bootstrapped the sampling distribution of the indirect effect. The bootstrapping approach does not impose assumptions about the shape of the variable's distribution and showed higher levels of statistical power compared to the Sobel test (Hair et al. 2016). After each individual path turned out to be significant, their product was computed, which represents the indirect effect. The variance accounted for (VAF), which determines the size of the indirect effect compared to the total effect (i.e., direct effect + indirect effect) is presented in Table 31. The calculated VAF hints at the link between self-disclosure strategy and willingness to host being mediated by social attractiveness (H2 is supported). VAF larger than 20% and smaller than 80% characterizes partial mediation. Counter to our expectations, the respondent's gender appears to be insignificant (H3 is rejected).

Model	Mediator	Predictor	t-value of the indir. effect	VAF	Type of med.
Willingness to host a male guest	Social attractiveness	Zoomed-in	6.34	46%	Partial
		Dark	4.51	50%	Partial
		Sunglasses	6.28	54%	Partial
Willingness to host a female guest	Social attractiveness	Zoomed-in	7.58	48%	Partial
		Dark	5.07	54%	Partial
		Sunglasses	8.04	51%	Partial

VAF - variance accounted for

Table 31. Size of the indirect effect in relation to the total effect

We further assessed the statistical differences between parameter estimates in line with Rodríguez-Entrena et al. (2018) and use bootstrap techniques to construct confidence intervals. For a female guest, a photo with sunglasses is perceived as significantly less socially attractive as compared to a dark photo (t=2.97, p=0.003). Differences in coefficients when contrasting a dark photo vs. a zoomed-in photo (t=1.79, p=0.074) or a photo with sunglasses with vs. a zoomed-in photo (t=1.36, p=0.174) were not statistically significant. For a male guest, a zoomed-in photo yielded significantly lower levels of social attractiveness than a dark photo (t=1.98, p= 0.047). Differences in coefficients when contrasting a dark photo vs. a photo with sunglasses (t=1.71, p=0.087) or a photo with sunglasses with vs. a zoomed-in photo (t=-0.39, p=0.697) were not statistically significant.

7.5 Discussion and concluding remarks

The enticement to assess strangers by their facial expressions is hard to resist in both offline and ICT-mediated communication, marked by the omnipresence of images. The ecological theory explains this fact by the need to perceive - a fundamental adaptive reaction. Faced with a stimulus, perceivers aim to study it and reveal structural invariants of an object like character or ability to further estimate its affordances. Following this logic, the current study examines whether users engage in sharing transactions in line with their online face-based judgments. The ecological framework appears to be relevant. Accordingly, “it seems we are still willing to go with our own instincts about whether we think someone looks like we can trust them” (Live Science 2018). Findings from our experimental study surmise that in the accommodation-sharing context, a photographic self-disclosure of a guest significantly influences his or her chances to be accepted or rejected by the host. Compared to a photo with a smiling face which is positively correlated with the probability to be hosted, a face covered with the sunglasses, a zoomed-in or a dark one, ceteris paribus, significantly decreases the applicant’s chances to be accepted. This link holds for both female and male guests and does not depend on the gender of a host, which contrasts the past research, which signified stronger effects for females (Fagerstrøm et al. 2017). Moreover, we demonstrate that social attractiveness judgments

mediate the link between a guest's self-disclosure and the host's willingness to cooperate. In line with previous studies postulating social attractiveness as one of the most critical traits for social and economic interactions (Dipboye et al. 1977; Miller and Routh 1985, Snyder and Rothbart 1971; Jackson 1983; Drogosz and Levy 1996; Shahani et al. 1993; Solnick and Schweitzer 1999; Castellow et al. 1990), this principle was confirmed for sharing platforms as well.

These findings have implications for a variety of stakeholders, including platform providers, users, and scholars. For users, the results imply the importance of online presence through a photo on the sharing platforms. At the same time, not all self-disclosure is beneficial, and some choices (e.g., wearing sunglasses) can have an opposite effect. Assuming the validity of privacy calculus (Dinev and Hart 2006), one should carefully anticipate the possible effects of publishing a specific profile picture when looking for joint consumption. Given this, platform providers may guide their users towards uploading a "proper" profile picture, which contributes to the positive perception of other sharing economy users and thus increases the number of transactions.

The current study comes with limitations that afford opportunities for future research. First, to avoid discussion of race in the sharing economy (Edelman et al. 2015; Kakar et al. 2018), only white faces were used in the experiment. Second, we did not test photos of different age groups like Ramos et al. (2016), which does not allow us to conclude the possible age credits. Third, neutral treatment may enrich the findings. Based on this, a complex model describing profile picture influence on willingness to be accepted for resource-sharing can be tested in the future.

Acknowledgements

We would like to thank Tabea Müller for her support throughout the data collection process.

8 Paper F: To Phub or not to Phub

Title

To Phub or not to Phub: Understanding Off-Task Smartphone Usage and Its Consequences in the Academic Environment

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Abstract

This study was inspired in part by calls for research to explore the ubiquitous phenomenon of phubbing in the academic environment. The goal of our study is to explore the phenomenon of phubbing and its consequences among students. Combining observations, questionnaires, quasi-experimental research design and focus groups interviews, our findings suggest that students phub a substantial amount of lecture time and often underestimate the effect this behavior has on their learning process. The quasi-experimental study shows that the number of times a student looks at a smartphone during the lecture is negatively related to the visual attention, while the total duration of smartphone use worsens the auditory attention. Follow-up analysis of the focus group interviews uncovers the causes of the phenomenon and possible preventive measures. The study thus contributes to a growing body of IS research on undesirable consequences of ICT use and provides implications for IS practitioners, simultaneously calling for a better solution of the problem commonly witnessed by the universities: the improvement of the educational process and student performance in the digital society.

Keywords

Smartphones, Phubbing, ICT in Education, Multitasking

8.1 Introduction

Increased availability of portable digital technologies made it a matter of course that information and communication technologies (ICTs) accompany our daily lives. Especially smartphones, with over 2 billion users worldwide, have become our everyday companion (Statista 2016). Smartphones are used everywhere – at home, at work, at the playground, and even in the classroom when students are supposed to learn something new. In general, smartphones and other ICTs can be used to improve the education process, e.g. by providing better simulations and models (Condord Consortium 2016), enabling learning (Coursera 2016; Glovico 2016) and facilitating better assessment (Kessler 2010). In fact, lecturers experience the advantages of ICTs, reporting a positive impact on the educational process in 75% of the cases (Alex 2007).

However, there is some evidence demonstrating that when it comes to learning, ICTs such as smartphones are a double-edged sword. If used inappropriately, devices in the classroom can cause distraction for learners (Fried 2008; Jacobsen and Forste 2011; Rosen et al. 2013; Gupta and Irwin 2016) and their peers (Fried 2008; Sana et al. 2013). Particularly smartphones, with 98% penetration rate among 18-24 aged people in developed countries (Nielsen 2016), represent the major risk, since the combination of perceived ease of use, portability and a broad range of features and functionalities increase the chances that learners will engage in off-task behaviors (Wood et al. 2012).

Frequently referred to as "phubbing", ignoring the conversational partner in favour of one's own smartphone (Karadag et al. 2015; Chotpitayasunondh 2016) has recently become a common behaviour among teenagers and adults, permeating child-parent communication (Radesky et al. 2014), work environment (Roberts 2015) and romantic relationships (Coyne et al. 2011; McDaniel and Coyne 2016; Roberts and David 2016; Krasnova et al. 2016). In contrast to other settings, the educational environment often implies one-to-many communication, for instance in the form of front lecturing. This particularity of academic environments creates favourable ground for phubbing to be practiced. In fact, holding a lecture has become a real challenge for many professors who have to hold a lecture in front of learners, many of whom are glued to their glowing screens. Both academicians and teachers are puzzled by how to deal with the excessive smartphone use in the classroom: "*Even when I know I've created a well-structured and well-paced lesson plan, it seems as if no topic, debate, or activity will ever trump the allure of the phone*" (Barnwell 2016). The most controversial is the fact that

more than 80% of students (Berry 2015) believe this to be an acceptable practice and perceive it as an established "new norm" (Chotpitayasunondh 2016).

Against this background, the goal of our study is to explore the phenomenon of phubbing in the academic environment. In contrast to previous studies that often use survey data (e.g. Levine et al. 2007; Jacobsen and Forste 2011; Rosen et al. 2013), we combine observations (Study 1), questionnaires (Study 1, 2), a quasi-experimental design (Study 2) and focus groups interviews (Study 3) to assess the prevalence of smartphone use during lectures, to investigate the patterns and motivations behind this behaviour and estimate the effect on educational outcomes. Moreover, comparing observed and self-reported data enables us to assess the magnitude of the estimation bias, when it comes to personal assessment of smartphone use.

The remainder of the paper is organized as follows. In the following section, we summarize related work and derive hypotheses that link personal study-unrelated smartphone use with the learning performance. In the next step, we present results of our qualitative study based on observations (Study 1), followed by the quasi-experiment (Study 2) and focus groups interviews (Study 3). Our results suggest that students spend substantial amount of time on their smartphones during the lecture. These findings justify further exploration of the effect of phubbing on visual and auditory attention during lectures. Analysis of the focus groups deepen our understanding of the causes of the phenomenon and allow us to derive possible preventive measures. Opportunities for future research and implications of our findings for IS research and practitioners are discussed in the concluding section.

8.2 Theoretical Background

Modern universities increasingly rely on ICTs to enable the construction of individual and collective knowledge (Holland and Judge 2013). Since modern society is permanently online and permanently connected (POPC), the immediate and ubiquitous access to knowledge via the Internet has gotten so easy that our own knowledge (for example of some facts) plays a rather subordinate role (Vorderer 2015). Following this new trend, the majority of universities provide students with permanent Internet access (Eduroam 2016). While fostering learning, availability of free and unlimited Internet access also stimulates by-side smartphone activities during the class. We hypothesize that:

H1: Phubbing is a widespread phenomenon in the academic environment.

Several studies investigate the effect of the smartphone usage in the class on learning, linking the observed dynamics to the multitasking phenomenon (Table 32). In general, multitasking is defined as practicing more than one activity simultaneously (Pashler 1994). In contrast to machines, humans are inclined to exhibit a "cognitive bottleneck" constraint in their decision-making (Welford 1967), which shows up in slower performance of the secondary task (Levy and Paschler 2001; McCann and Johnston 1992; Pashler et al. 2008; Schumacher et al. 2001; Welford 1952). Following this logic, smartphone use in the classroom for study-unrelated purposes is expected to negatively influence the academic success. According to research, short-term education outcomes are likely to suffer first. For example, texting was found to have a detrimental effect on memorizing the lecture material (Ellis et al. 2010; Wood et al. 2012; Froese et al. 2012), although some studies have not confirmed this proposition (Rosen et al. 2011; Wood et al. 2012). A ringing phone during the class may affect not only the smartphone owner him/her-self but also fellow students, leading to lower scores on a comprehension test and missing corresponding information in the lecture notes (Shelton et al. 2009; End et al. 2009). Moreover, cell phone use has been shown to slow down the responses on the lexical decision task (Shelton et al. 2009).

Study	Device	Method	Measured SP activity	Performance-related variables (Relationship)
Ellis et al. (2010)	SP	E	Texting	Lecture-based quiz score (-)
End et al. (2009)	SP	E	SP Rings	Comprehension test (-) Lecture notes (-)
Froese et al. (2012)	SP	E, S	Texting	Lecture-based quiz score (-)
Junco and Cotten (2012)	SP and other ICTs	S	FB use Texting Emailing Talking on SP Using IM	Overall college GPA (-) Overall college GPA (-) Overall college GPA (n.s.) Overall college GPA (n.s.) Overall college GPA (n.s.)
Rosen et al. (2011)	SP	E	Texting	Recall test (-/n.s.)
Shelton et al. (2009)	Phone	E	SP Rings	Quiz score (-) Response speed on lexical decision task (-)
Smith et al. (2011)	SP and other ICTs	E	SP conversation Texting	Memory Task (-) Memory Task (-)
Thornton et al. (2014)	SP	E	SP presence	Digit cancellation task (n.s.) Additive cancellation task (-)
Wood et al. (2012)	SP and other ICTs	E	Texting	Memory quiz (n.s.)

Note: SP-smartphone, E-experiment, S-survey, n.s. – not significant

Table 32. Association between smartphone activities and learning performance: overview of selected studies

Furthermore, Thornton et al. (2014) demonstrate that tasks with greater attentional and cognitive demands are extremely sensitive to any distractions, including the mere presence of the smartphone. Regarding the long-term academic performance (e.g., overall GPA), evidence

on the influence of smartphone use remains mixed, as reflected in Table 1. Based on self-reported data, texting and engagement with Facebook when doing homework is negatively associated with college GPA, while for other activities, such as emailing, talking on the phone or using instant messaging no significant impact has been found (Junco and Cotton 2012). Taken together, while research results remain mixed, there is growing evidence about the negative impact of smartphone use on the performance on tasks that require attention.

Learning theory (Dunn 1983; Dunn 1984; Reinert 1976) suggests that there are three learning modalities: visual, auditory, and kinaesthetic/tactile abbreviated as VAK (Barbe et al. 1981). Fleming (1995) extended this model to VARK by adding the "reading/writing" construct. Multiple tests of the VAK/VARK model in past research suggest that the majority of students are multimodal (i.e. use several channels simultaneously) in their learning (Prithishkumar and Michael 2014). In a traditional lecture setting, two forms are mainly prevalent: namely visual channel, achieved through lecture slides, and auditory channel, accomplished by the talk of the lecturer. We suggest that the use of smartphones during lectures affects students' attention through the aforementioned channels. In line with the past research, we approach phubbing via two dimensions:

1) quantitative (e.g. Rosen et al. 2011), defined as the number of times the smartphone is accessed; and 2) qualitative (e.g. Junco and Cotton 2012), defined as the total duration of the phubbing session during the lecture.

We hypothesize that:

H2a. The number of phubbing sessions reduces visual attention.

H2b. The total duration of phubbing activities reduces visual attention.

H3a. The number of phubbing sessions reduces auditory attention.

H3b. The total duration of phubbing activities reduces auditory attention.

8.3 Study 1: Understanding Real Behaviour and Self-Perceptions

In order to test our hypothesis H1, we conducted structured observations to assess the frequency of student phubbing activities during lectures in a purposive sample of bachelor students at one German university in summer term 2016. A lot of studies are conducted in either an experimental setting or use self-reports for data collection (Table 32). While these methods can be appropriate for several application areas, smartphone use may be different in artificial experimental setups as opposed to real environment. First, the habituation to the smartphone

may be the reason of decreased control and poor recall. Second, classroom smartphone use may be perceived as socially undesirable (since it may signal disrespect to the lecturer), which may lead to underreporting. In this case, naturalistic observation which does "not interfere with the people or activities under observation" (Angrosino 2005, p. 730), yields more reliable data. Observations are a standard method used across a variety of disciplines. This method is especially common in the context of smartphone use, since this activity is often conducted in public places and users often underestimate the time they engage in it. Indeed, a number of past studies use observation as a primary method of data collection to study smartphone use and addiction (e.g., Radesky et al. 2014; Thompson et al. 2013)

In the beginning of the observations, two observers took a seat in the middle of the lecture hall. Each of them selected three target seats while the lecture hall was still empty to be able to choose a student without selection bias; if the left-most seat stayed empty the person right from it was chosen. Observers monitored students seating in the range from row 7^{th} to row 11^{th} (median = 9^{th} row). This was done to assure that we capture an "average student". The following parameters were recorded: gender, age, smartphone position in the beginning of the class, presence of other devices (e.g. notebook or tablet); start, end and type (e.g., browsing, texting) of each phubbing action as well as the reaction of neighbors.

At the end of the lecture, we asked the observed student to fill in a questionnaire in a paper form about his or her own estimated smartphone use and some demographic information, which allowed us to compare self-assessment with the observations' findings. The following questions were asked in a closed format: 1) For how long did you use your smartphone during this lecture? 2) For what purpose did you mainly use your smartphone during the lecture? 3) Could you follow the content of the lecture? 4) Did you get distracted by your smartphone? 5) If yes, how much? 6) Did your neighbor's behavior encourage you to use your smartphone? 7) Guess: How often did you use your smartphone during the lecture? 8) How strong was your interest in the topic of the lecture? 9) How did you find the lecture style of the professor? (to capture satisfaction with the style of lecture presentation), and 10) Why did you use your smartphone during the lecture?

8.3.1 Sample

We collected 60 observations (32 women vs. 28 men), which can be viewed as a rather balanced distribution considering the random choice of the target student. The average age in the sample

is 20.5 years (min = 18 y.o, max = 27 y.o.). For the majority (more than 80%) it was the second semester at the university.

According to the Mann-Whitney U test, no significant differences were found between females and males in absolute phubbing time (z=-0.326, Prob >|z|=0.744) and relative phubbing time as a percentage of the lecture duration (z=-0.652, Prob >|z|=0.514). The subject of the lecture does not yield significant discrepancy in phubbing behavior based on Kruskal-Wallis Test with $\chi^2(2)$ =6.777, p=0.034 for absolute phubbing time and $\chi^2(2)$=5.311, p=0.07 for relative phubbing. Since the data significantly deviated from a normal distribution (Shapiro-Wilk test p<0.05 for both absolute and relative phubbing time), we used a non-parametric test. Generally, the observations took place over the entire lecture duration. Therefore, the mean observation time accounted for 1 hour 22 minutes. Sometimes the observation had to be stopped earlier because of unexpected events: observed student has left or the lecture was finished earlier by the lecturer. 91.7% of the observed students had their smartphones already visible on the table from the very beginning and often started the class with their smartphones in their hand. For the majority (85%) the smartphone was the only device present on the table; three students had tablets and six students had laptops additionally on their table.

8.3.2 Activities: What Do Students Do on their Smartphones?

Our observations show that on average students practice phubbing activities about eight times during a lecture (mean=7.98; median=8). The least heavy users only accounted for two smartphone sessions, whereas the heaviest users made 21 queries into their smartphones. Since observers were sitting almost directly behind the target students, it was possible to note the specific uses of the smartphone. One single "phubbing session" often contained several actions, e.g. someone was browsing first, then got a message and continued to type a message. Table 33 shows the number and the share of students observed doing different activities on their smartphone during the lecture as well as the frequency and duration of phubbing actions. The most interesting result shown here is that during lectures, texting and browsing are practiced by 91.7% and 90.0% of students respectively. A typical student from our sample devoted around 16 minutes of their smartphone time to messaging. Browsing or social network activities accounted for longer time periods and took around 20 minutes. Although the third favored action observed is looking at the screen in order to check the time or for updates (58.3% of observations), it takes only about 25 seconds on average. This can be explained by the rather small amount of time needed to complete these tasks. Focused reading was noticed among 38.3% of students with the average duration of about six minutes. Seven students (11.7%) used

smartphones for playing games, spending around 4 minutes on entertainment. Activities such as photo shooting and reading were either related (e.g., photo of the professor's notes) or not related to the course (e.g., videotaping for snapchat). Taken together, phubbing activities not related to the learning process (i.e., texting, browsing, looking and playing) sum up to 40 minutes for an average student, thus occupying one-third of the lecture time.

Researchers also examined the surrounding of the observed students to see if any cascading behavior took place, i.e. students being triggered to use their smartphone by the smartphone use of other fellow students. In 23.3% of cases (14 observations) an observed person had no neighbors, whereas 22 students (36.7%) had peers sitting next to them. Of those, 30.0% of their fellow students (18 students) used their smartphone extensively, whereas 5.0% were not phubbing and for 1 observation it was not possible to get any results.

Use	Description	Frequency of action	Share of all actions (N=480)	Mean time in min
Looking	The student catches a quick glance at the screen for checking the time or if there is a new message without unlocking the phone.	79	16.5%	00:25
Texting	The student types something on the smartphone screen; usually a message at WhatsApp, Facebook or an e-mail.	234	48.8%	15:47
Browsing	The student swipes the finger from bottom to top of the smartphone screen to browse the internet; usually Facebook, Instagram, etc.	224	46.7%	20:10
Photo	The student takes a picture with the smartphone; either of the notes from the professor or of himself at Snapchat.	12	2.5%	00:54
Reading	The student scrolls down and carefully reads for example the news or study-related articles.	71	14.8%	05:47
Playing	The student taps on or swipes with his finger over the smartphone screen for playing a game.	22	4.6%	03:48
Calculator	The student uses the calculator application to solve an arithmetical problem.	7	1.5%	00:14
Other	Listening to the voicemail.	1	0.2%	00:03

Note: mean time in minutes – average duration among all 60 observed students.

Table 33. Ever-observed phubbing activities during the lecture

8.3.3 Questionnaire

After the observation, 56 of the monitored students filled out the questionnaire. The reason for the four missing responses are the cases when students left the class earlier or rejected the request.

22 respondents (39.3%) estimated the time phubbed during the lecture correctly (Figure 23), which we defined as being accurate to up to 5 minute difference. Surprisingly, two-third of them are "heavy phubbers" who spent more than half an hour with the device in total. This speaks for a conscious behavior, meaning that these students are in general aware how much they used their smartphone. While 21.4% of respondents were too self-critical and overestimated their phubbing behavior, other 41.1% of respondents definitely underestimated

their smartphone use, among which 14.3% underestimated the time they used their smartphone for about 10-20 minutes. These differences in self-report vs. real behavior further support the importance of field data collection when it comes to capturing individual smartphone use, e.g. with the help of observations.

Responding to the question whether it was possible to follow the lecture (7-point Likert scale; 1=yes, 3=partly, 7=no), 10.7% agreed they could do so. 28.6% claimed that they were able to partly comprehend the material and 17.9% reported they could not follow the professor's presentation.

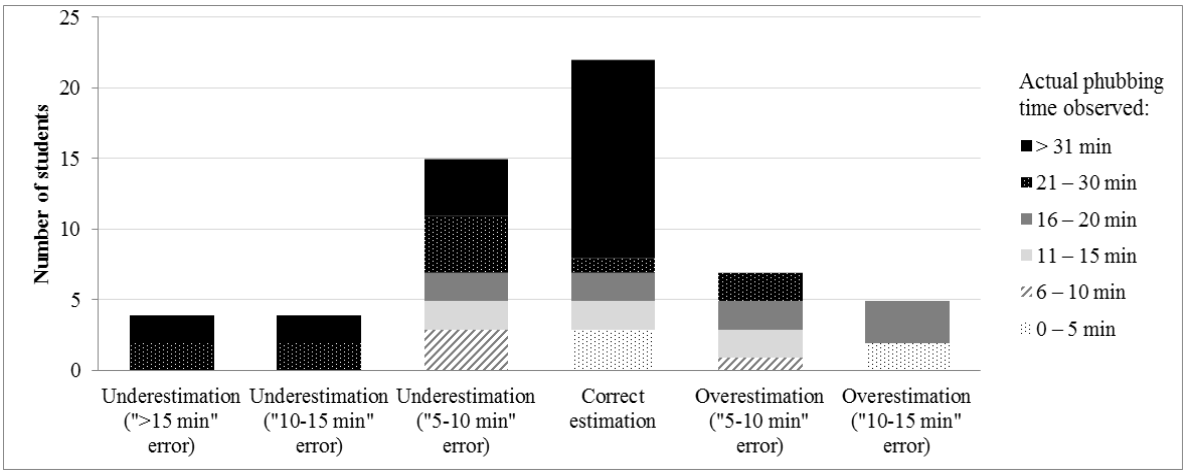

Figure 23. Students' estimation of the time phubbed vs. actual time phubbed

The majority of respondents (55.4%) referred to the smartphone as a distraction during the lecture whereas 44.6% reported they were not disturbed. Those 31 students who felt distracted by their smartphone had to express to what extent they were distracted. Here, most students were only distracted a bit (around 50.0%) or barely (around 30.0%). However, the respondents did not shift the responsibility for their smartphone use to a neighbor: 50 of 56 respondents reported no influence on their smartphone behavior by the fellow students nearby.

For the next two questions, we controlled for the general attitude towards the subject and the satisfaction with the presentation style of the lecturer, which might have the potential to (at least) partly explain the phubbing behavior of respondents. Self-reported interest in the subject was low for the majority of respondents (60.8%), which can be partly attributed to the fact that mandatory courses were in the focus of our study. Presentation style of the lecturer was perceived as "rather good" or "good" in 37.5% of cases (see Table 34). To investigate whether the presentation style is related to the smartphone use we compared the average phubbing time for students who reported to be interested in the subject. We observe practically no difference in time spent on the smartphone regardless of the presentation style: both groups used their

smartphone around 17 to 18 minutes. In case a student was not interested in the subject, we see a difference in the smartphone use: the average phubbing time was more than 25 minutes when the presentation was evaluated as good compared to 37 minutes when the presentation style was evaluated otherwise. As such, interest in the subject, hence own curiosity, seems to be a decisive factor.

	High satisfaction with a presentation style		Low satisfaction with a presentation style	
	N (%)	Average phubbing time	N (%)	Average phubbing time
High interest in the subject	14 students (25.0%)	00:18:56	8 students (14.3%)	00:17:28
Low interest in the subject	7 students (12.5%)	00:25:12	27 students (48.2%)	00:37:01

Table 34. Average phubbing time and student assessment of the own interest in the course and the presentation style of the lecture

Finally, we directly asked students about the reasons of their smartphone use during the lecture. The main reasons for phubbing according to the questionnaire are low satisfaction with the presentation style (60.7%), boredom (55.3%) and urgent message (51.8%). As already mentioned, there is a strong connection between the lecture style and boredom. The lower the satisfaction with the lecture style, the more boredom is reported, and the more easily respondents get distracted by their smartphone. These findings are in line with Lee et al. (2014) who state that smartphones are mainly used to get over boredom and so this is one of the main reasons why students engage in phubbing. All in all, the findings from Study 1 suggest that phubbing is common to the academic environment, thus confirming H1.

8.4 Study 2: Phubbing and its Influence on Students' Performance

In Study 2 we empirically assessed whether the use of smartphones during lectures decreases the visual and auditory attention of students.

8.4.1 Quasi-experimental Design and Flow

For the quasi-experimental study (William et al. 2002), a 90-minutes lecture in Business Informatics at a large German university in the middle of the summer term 2016 has been chosen. The procedure included a two-part survey offered both in electronic and paper form. The first part of the survey was distributed at the beginning of the lecture with the notice that it was used to assess the quality of the lecture. It contained questions related to all former lectures regarding students' general satisfaction with the lecture ("How satisfied are with the lecture in

general?"), the perceived usefulness of the lecture ("How useful do you find this lecture in general?"), the general learning growth ("How much do you usually learn in this lecture?"), the presentation style of the lecturer ("How do you find the presentation style of the lecturer?") and the general well-being and stress level of the student ("How do you feel?", adopted from Kross et al. (2013) and the motivation ("How motivated are you right now to study for this lecture?"). Questions were estimated on a scale ranging from zero to one hundred with latter being the best value. We used one-item scales for each question since keeping the questionnaire short was a priority considering the limited time frame of the lecture.

The second part of the survey took place at the end of the class and contained the same questions but related to the current lecture (e.g., "How much have you learned in today's lecture?"). We additionally asked questions with respect to smartphone use in terms of the general duration of smartphone activities ("How often have you used your smartphone during the lecture?") and frequency of smartphone sessions ("How many minutes you have used your smartphone during the lecture?") during the lecture. Furthermore, an open question was included where students had to state for what reason they used the smartphone ("Be honest: If you have used the smartphone during the lecture, why have you done this?"). Additionally, students had to state for what purpose ("How much of this time (in percentage, %) did you spend with one of the following applications? (Messaging, Social Networks, Non course-related use of Internet, Course-related use of the Internet, Games)" they used their smartphone. Finally, to check the relation between the surroundings and the person's intention to use a smartphone (Fried 2008; Sana et al. 2013) we asked: "Have students in a direct proximity used the smartphone during the lecture?"

The educational outcomes – visual and auditory attention – were assessed by checking two pieces of information incorporated in the lecture and transmitted via only one channel. First, during the class a lecturer told a story about a Ph.D. student from Indonesia and further referred to the example 3-4 times repeating the country of origin. Auditory attention was measured by asking "Where does the former professor's Ph.D. student come from?" Second, on the slides which are usually designed in blue-white colours, a scheme in pink appeared to describe customer relationship management (CRM). This peculiarity was, however, intentionally not pointed out orally. We therefore asked later: "What colour did the CRM scheme have?" Both questions implied open answer and were then coded to binary variable (1- correct answer; 0 - false answer). At the end, we used student-selected unique identifiers to match both parts of the survey.

8.4.2 Sampling and Descriptive Statistics

A total of 77 respondents took part in our survey of the available 130 possible participants. 52% of the respondents in our sample are female. Almost all students (92.2%) reported that they used their smartphone during the lecture. Looking at the evaluation of student well-being and stress level at the beginning and at the end of the lecture we see only slight changes in well-being (the score of 69.8 in the beginning, and the score of 64.4 at the end) with a negative direction; whereas the stress level seems to be rather constant on average (the score of 57.1 at the beginning vs. the score of 56.6 at the end). Furthermore, in comparison with all former lectures, the present one was evaluated more positive in terms of its perceived usefulness (the score of 56.3 vs. 75.3), the satisfaction with the lecture (the score of 57.2 vs. 68.2), the presentation style of the lecturer (the score of 63.4 vs. 67.6) and the learning growth (the score of 49.8 vs. 56.8).

Regarding the smartphone use across gender during the lecture, we notice almost no difference in terms of frequency of smartphone use. However, when it comes to the duration of smartphone activities male students appear to spend more time with their smartphones compared to their female counterparts (see Figure 24, left). Asking for the purpose (why students used the smartphone), the survey responses are generally in line with the results of study 1. The reported purposes are messaging (42.3%), followed by non-course-related use of Internet (18.6%), course-related use of Internet (13.5%), social network use (12.4%), and games (2.0%) (see Figure 24, right).

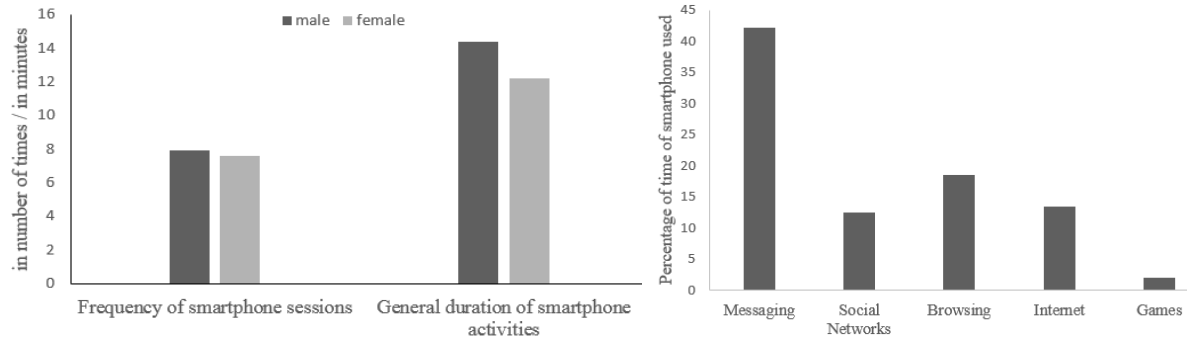

Figure 24. Frequency and duration of smartphone use per gender (left) and the purpose of smartphone use (right).

Additionally, almost all respondents reported that fellow students in their proximity used the smartphone during the lecture (72.4%), whereas only around 6.6% reported that they did not notice any phubbing next to them. However, 21% of respondents were not able to give an answer to this question.

Answering the question "If you have used the smartphone during the lecture, why have you done this?" respondents mainly reported texting as their main reason (43.5%), followed by boredom (18.8%) and concentration issues (14.9%). Some respondents also used the smartphone as a substitute for a watch (hence used it to check time) (6.9%), to read news (8.9%) and also for course-related activities (5%). Around 2% of the respondents also reported the use of their smartphone during the lecture as a result of it being a habit.

8.4.3 Results

To test the hypotheses proposed in Section 8.2, we did a logistic regression analysis for both visual and the auditory attention outcomes, since both variables were coded as binary (Table 35). Apart from that we also controlled for the well-being, fellow students' smartphone use, motivation, stress level and gender of the student, as well as the lecture evaluation variables (i.e., usefulness, presentation style, satisfaction, and learning growth).

Independent Variables	Visual Attention			Auditory Attention		
	Coefficient β	Std. Error	Significance Level	Coefficient β	Std. Error	Significance Level
Intercept	0.233	1.377	0.866	0.698	1.290	0.588
Frequency of Smartphone Use	**-0.186***	0.089	0.036	0.087	0.060	0.149
Duration of Smartphone Use	0.032	0.035	0.365	**-0.080***	0.037	0.031
Stress	-0.001	0.012	0.903	-0.011	0.012	0.346
Motivation	-0.022	0.018	0.223	0.024	0.017	0.158
Usefulness	-0.012	0.019	0.541	0.003	0.017	0.858
Presentation Style	0.007	0.020	0.706	-0.004	0.017	0.829
Satisfaction	0.014	0.026	0.574	-0.023	0.023	0.331
Learning Growth	0.001	0.014	0.939	0.011	0.014	0.442
Gender	-0.575	0.493	0.243	0.595	0.485	0.220
Fellow Student Use of Smartphone	0.051	0.395	0.897	-0.583	0.429	0.174
Nagelkerke Pseudo R-squared	0.187			0.240		

*p < 0.05

Table 35. Results for regression coefficients, standard error and significance of the logistic regression

We observe that the frequency of smartphone use significantly reduces the visual attention. This indicates that the smartphone interactions that take place during the lecture – even if they are only brief –do have a negative influence on how well a student can follow the slides presented during the lecture (H2a confirmed). The coefficient for the total duration of the smartphone use was statistically insignificant (H2b rejected).

In contrast, auditory attention is negatively influenced by longer smartphone sessions. In other words, the more time respondents spend with the smartphone the less they are able to correctly

memorize the content presented orally (H3b confirmed). No significant impact of the frequency of smartphone use on the auditory channel has been found (H3a rejected).

In summary, results of the logistic regressions show that the number of times a student looks at a smartphone during a lecture is negatively related to his or her visual attention. It is reasonable because the number of times one is distracted from the lecture slides results in one missing some visual information. Second, the total amount of time a student devotes to a smartphone is negatively related to auditory attention. As such, the longer a person uses the smartphone, i.e. the deeper the involvement with the smartphone is, the less attentively one is able to listen to the lecturer.

8.5 Study 3: Using Focus Groups to Explore Reasons of Phubbing among Students and Opportunities to Reduce It

In order to gain better understanding into students' phubbing behavior, its antecedents and reactions, two focus group interviews were conducted at one German university in November 2016. This method allows researchers to "tease out the strength of participant's beliefs and subtleties about the topic that may be missed in individual interviews" (Campbell 1988). Based on the literature overview and discussion among the authors, the following three items targeting phubbing in the academic context were generated and included in the protocol:

1) Do you check the smartphone or entertain yourself with the smartphone during lectures? What could be the reasons for this behavior?
2) In your opinion, how do smartphone activities during a lecture influence the performance? Does checking the smartphone help you to relax quickly? Or do you feel negative consequences of distraction, e.g. it is difficult to follow the lecture?
3) Do you think it is possible to reduce phubbing during lectures? Why? If so, how is it possible?

Two focus group interviews were organized, with 8 students (2 males and 6 females) in the first group and 6 female students in the second one. For analytical purposes, both focus group results were combined into one dataset. According to the short questionnaire completed in the beginning of the discussion, the majority (78.6%) of respondents study Business Informatics and are 26 to 30 years old; all others (21.6%) study Business and are 21 to 25 years old. All respondents have a smartphone; however, half of the sample got it after their 20th birthday. Five respondents (35.7%) have owned the device since they are 16 to 20 years old, and two respondents got used to smartphones as teenagers as they were 11 to 15 years old. Most

frequently smartphones are used for emails and social media (64.3%) and most of the respondents (57.1%) check it several times an hour.

Our first research question aimed to elicit the prevalence of phubbing during lectures. Our data suggests that it is common that students use their smartphone during the lecture (P2.6: "*Of course I do it, I mean, sometimes it's more, sometimes it's less*"), with two exceptions (P1.5. and P1.3) where a radical way to preclude this was chosen: P1.3 "*…I live at the campus … so I just left the phone at home for two hours so that I don't get in the situation I want to take it out*". When specifying the reasons, it is possible to differentiate between the kickoff and protracted absorption triggers. Initial unlocking of the smartphone is usually rooted in concentration problems (P2.6 "*very often I'm off…I'm just not concentrating anymore but I'm really trying not to do it",* P2.4 *"it is just about the self-control which is not that present sometimes*") or the sense of boredom during a lecture (P1.4 "*if the lecture is not so interesting…*" (P1.8, P2.3- the same). Apart from content, the presentation style matters as pointed out P1.7, "*there is an interactive kind of lecture that doesn't really give you the chance to look at the smartphone that often and there is this … ehm … frontal version of lecture where you .. like disconnected from the teacher*", which is in line with our findings from Study 1. In contrast, lasting phubbing may be arranged in advance illustrated by P2.6 : "*it has to do with private things I' organizing like…ahm…meeting friends or checking what I have to…to buy in the evening (laughing)….or ahm….like…what other things have to be …it's not really entertainment…*" Similarly, P2.1 said "*it's more like what I have planned... If I have thing very urgent … or something I have been thinking over a whole day: I need to write that person, I need to write this, I need to write that. …it's just because I have things that I need to do on my phone, then…it doesn't matter if it [lecture] was interesting or boring*", disputing the importance of style and content of the lecture. Even if enduring phubbing was not intended, after a quick check, students are swamped by the multifunctionality of the device and permanent updates leading to absorption with the smartphone, summarized by P2.4: *"…you switch on your phone and then…oh… I have a message and then I'm tagged somewhere on a new picture or let's take a look who is this so (laughing)…so yeah…it really can be such a sequence of unwanted actions actually…*"

Referring to the second research question about the influence of phubbing during lectures on performance, students admit decreasing attention and debunk the myth about multitasking. For example, P1.3 reported: "*I think I pay less attention to the lecture…I cannot listen if I am writing a text message, you think you can but actually you can't*". Similar ideas are expressed by P1.2.

("*you lose information*"), P2.2. ("*cannot keep up with the lecture anymore*"), P1.7 (…"*can't focus on the contents that are presented, in the moment you are distracted*…"), P2.5. ("*the performance goes down.. like.. definitely goes down*"). However, some respondents claim that phubbing won't influence the final grade for the class because they will catch up later. For example, P1.3 suggests "…*if I don't pay full attention in the lecture I know I have to go through the information again when I learn for the exam*" or P2.6. "…*and you have to do more at home (laughing)*". In general, as P1.7. mentioned: "*a negative effect in inefficiency! …. that leads to the consequence that you have to focus on the content another time*".

Finally, we asked participants to reflect on possible ways to reduce phubbing during lectures. "*If smartphone is on the table already (smiling), it's very easy to have a quick look in your messages, and so on*" responded P2.6 and therefore it was proposed to leave smartphones in the bag (P2.6, P1.4, P1.7) or to switch on the flight mode because it is "*a good solution to not receive anything…not to be distracted by push messages*", as noticed P1.7. The majority agrees that "*restriction won't work well*" as P2.1 said. At the same time, P2.4 explains that even in the absence of the signal a student "*finds something [P2.6 is nodding her head] …he can draw [laughing]… just use old-school methods to entertain yourself...there are plenty of [laugh]*". P2.4. experienced that students "*just substituted it [smartphone] with their laptops… they just did the same thing with Candy Crush and whatever stuff on the laptops*". Instead, P2.1 and P1.4 encourage increasing awareness and "*tell them what effect it would have*" (P2.1). However, students find the best way to reduce phubbing is to "*fight fire with fire*", namely, to develop a smartphone application and thus "*integrate functions of the smartphone into the whole lecture, for example surveys*" (P1.7). Similarly, P1.2 proposed: "*I thought about using questionnaires…so that everyone in the lecture has to seek answers a,b,c,d like in the "Who will be a millionaire?*". This will give "*an instant feedback on the topic of the lecture...how many [students] understood…*" Thus participants perceived a need for more interaction between a lecturer and students during the class which, accounting for the ubiquitous addiction to devices, could be established through the smartphone.

8.6 Discussion, Implications and Concluding Remarks

This work demonstrates that phubbing is common in academic settings. Three studies showed that students use their smartphone a substantial amount of lecture time and may underestimate the effect this behavior has on the learning process. The results of study 1 show that study-unrelated activities like texting, browsing, looking at the screen and playing take about one-

third of the lecture time. Regarding study-related activities on the smartphone, e.g. looking up an unknown definition or using calculator, students allocate 1% of time. However, the majority of respondents are aware of the time lost, although some "heavy users" strongly underestimate time spent with the smartphone with a more than 10-15 minute error. Almost one third of the observed students claimed they were able to follow the presented material only partly, thus admitting the diminishing concentration, while more than 50% answered that they able to (partly) follow the lecture.

The results of quasi-experimental study 2 suggest significant adverse effects of phubbing during lecture on attention and learning. As such, the number of times a person looks at the smartphone screen is negatively related to visual attention. This effect seems to take place because frequent distraction from the lecture slides naturally leads to the loss of the visual information. The amount of time a student devotes to the device is also negatively related to his or her auditory attention. Our argument is that long smartphone sessions usually imply deeper involvement with the activity which means students listen to the lecture less carefully.

The results of study 3, designed as focus groups interviews, in combination with surveys embedded in study 1 and study 2 offer insights into why students practice phubbing, how they perceive the effects of phubbing, and whether it is possible to prevent it. As such, low interest in the lecture, low satisfaction with the presentation style of the lecturer as well as self-control issues are the main reasons for off-task smartphone activities. Although negative effects on instant educational outcomes were admitted, the majority of respondents believe phubbing at the lecture does not influence the long-term outcomes, namely the exam grade, since they plan to go through the material once again. To prevent the excessive smartphone engagement, it is recommended not to put the device on the table leaving it in the bag or switching on the flight modus in order not to be distracted by constantly incoming messages and newsfeed updates.

Our findings have implications for IS practitioners mainly targeting mobile app providers and smartphone producers. To the best of our knowledge, there exist only few applications addressing the phubbing issue at school, at work or at home (Flipdapp.co 2017; Xerofone.com 2017). Narrowing the perspective to the learning environment, students (study 3) believe the best way to solve the problem is to create a smartphone application that allows to give an immediate feedback to the lecturer on the material understood and thus helps to keep attention (Dyer 2016). Another opportunity is an application that monitors phubbing activities and makes students aware of the total amount of time spent inefficiently during learning (Goldman 2015).

Moreover, raising awareness about the scale of phubbing in the educational context may be desirable.

This study was inspired in part by calls for research to explore the ubiquitous phenomenon of phubbing in the academic environment, previously studied in the romantic (e.g., McDaniel and Coyne 2016; Roberts and David 2016; Krasnova et. al. 2016) and family context (Radesky et al. 2014). Our aim was to understand the phubbing behavior of learners in the academic context, as well as to gain a better understanding of its antecedents and consequences. However, the current study comes with limitations that open exciting venues for future research. First, our investigation can be extended to a broader range of subjects and type of classes to include seminars and tutorials, thus increasing the reliability of the results. Moreover, our findings are especially valid for academic institutions that have large classes and a high level of smartphone adoption among students. Finally, to extend our results, a more comprehensive model describing phubbing influence on learning can be tested in future studies.

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9 Paper G: Why Phubbing is Toxic for your Relationship

Title

Why Phubbing is Toxic for your Relationship: Understanding the Role of Smartphone Jealousy among 'Generation Y' users

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Abstract

Coined as “phubbing”, excessive use of smartphones in the romantic context has been shown to represent a barrier to meaningful communication, causing conflict, lowering relationship satisfaction, and undermining individual well-being. While these findings project a dire picture of the future of romance, the mechanisms behind the detrimental influence of partner phubbing on relationship-relevant markers are still little understood. Considering prior evidence that partner phubbing leads to the loss of exclusive attention towards the other party, we argue that these are rather the feelings of jealousy partner phubbing is triggering that are responsible for the negative relational outcomes. Based on the analysis of qualitative and quantitative responses from “generation Y” users, we find that partner phubbing is associated with heightened feelings of jealousy, which is inversely related to couple’s relational cohesion. Moreover, jealousy plays a mediating role in the relationship between partner’s smartphone use and relational cohesion, acting as a mechanism behind this undesirable link. Challenging the frequently promoted euphoria with regard to permanent “connectedness”, our study contributes to a growing body of IS research that addresses dark sides of information technology use and provides corresponding implications for IS practitioners.

Keywords

Smartphones, Social Media, Phubbing, Relational Cohesion, Jealousy.

9.1 Introduction

> *"The first couple of weeks he was on his phone 24/7. I assumed it was just the novelty of having a smartphone for the first time and I didn't think anything of it. But it never stopped. All of "our" time just twisted into him being on his phone. I was practically begging for his attention. I'd try to have deep conversations; he'd be on Reddit. I'd try snuggling and being cute; he'd be playing Heartstone. […]. We can't have a quiet evening together […] without his phone competing for his attention. I'm lonely and depressed." (MissHurt 2015)*[11]

We are in a coffee shop and we observe: *A couple walks in. She already has her smartphone in the hand. They sit down on opposite sides of the table. While he grabs some food for both of them, she starts to immediately focus on her smartphone, constantly scrolling and swiping. When he returns she stops using it for just a minute. Once they start drinking their coffee, she keeps on interacting with her mobile device. He gets visibly bored and also takes out his smartphone, possibly to just have something to do. She notices and passes him her smartphone to show him something. When he returns her smartphone, she continues using it for almost 30 minutes straight. Meanwhile he goes through a routine to pick up his smartphone for a few minutes only to put it away for a short time and to grab it again, seemingly bored. They rarely talk to each other while looking at their smartphones. After about an hour they leave together. When he puts on his jacket, she still keeps looking at her smartphone.*

With around 3.4 billion users worldwide (Ericsson Mobility Report 2015), it is not surprising that smartphones are increasingly permeating our daily routines: We use them on the railway station waiting for the train, in the bus that brings us home. We use them when we meet friends, when driving cars (Smith 2015), or crossing a busy road on a pedestrian walkway (Hatfield and Murphy 2007). For many, smartphones are the first thing they touch when waking up, and the last one they look at before going to sleep (Cisco 2014). Fueled by the widespread interest in Social Media apps (Salehan and Negahban 2013), using smartphones is fun, useful, informative, and highly addictive (e.g. Jung 2013). In fact, studies show that 81 percent of users keep their smartphones nearby for the entire day and check it 110 times per day on average (Woollaston 2013).

[11] This quote has been edited for style to improve readability. Original can be found at: https://www.reddit.com/r/TwoXChromosomes/comments/3lmz1h/i_know_a_lot_of_things_can_create_problems_in/

Indisputably, the widespread adoption and usage of smartphones has changed our lives. However, the nature of these transformations is still ambiguous. Some studies report the positive influence of smartphones in professional environments such as healthcare coordination (Wu et al. 2011, Whitlow et al. 2014; Wickersham et al. 2015), infrastructure monitoring (Mohan et al. 2008, White et al. 2011), or simply emphasize their value in promoting socialization with geographically distant individuals (Smith 2015; Amplitude Research 2013). At the same time, another stream of research stresses the harmful consequences of smartphone interference across a variety of communication contexts, including face-to-face conversations (McDaniel and Coyne 2016), parents-child interaction (Devitt and Roker 2009), work-related management activities (Roberts 2015) and educational processes (Ling 2000; Campbell 2005). Among these findings, the insights into the damaging role of smartphones in the romantic context are particularly alarming.

Indeed, coined as "phubbing", snubbing the romantic partner when using the smartphone in his or her company has been shown to cause conflict, lower relationship satisfaction, and individual well-being (McDaniel and Coyne 2016; Roberts and David 2016). While these findings project a dire picture of the future of romance and family structures, the mechanisms behind the detrimental influence of partner phubbing on relationship-relevant markers is still little understood. As of now, existing research suggests that smartphones may represent a barrier to meaningful communication, provoking feelings of constant interruption, disrespect (Duran et al. 2011, Tertadian 2012) and irritation (Theiss and Solomon 2006; Roberts and David 2016). However, the mechanism behind these negative resentful reactions remains uncovered. To fill this gap and considering that partner phubbing inevitably leads to the loss of exclusive attention towards the other party, we argue that these are rather the feelings of *jealousy* partner phubbing is triggering that are responsible for the negative relational dynamics reported in past research. Indeed, defined as "*a protective reaction to a perceived threat to a valued relationship, arising from a situation in which the partner's involvement with an activity and/or another person is contrary to the jealous person's definition of their relationship*" (Bevan and Samter 2004, p. 15), jealousy incorporates loss of exclusive attention as one of its major premises (Bauminger 2010; Tov-Ruach 1980). Negative in its essence, jealousy has commonly been associated with such undesirable relational outcomes as expressions of aggression and conflict (Guerrero et al. 1995), as well as relationship dissatisfaction (Parker et al. 2010). Against this background, the goal of our study is to investigate the role of jealousy as a mediating mechanism in the relationships between partner's smartphone use and corresponding relational outcomes.

The remainder of the paper is organized as follows. In the following section we summarize related work, and derive hypotheses that link *partner's smartphone use* with the feelings of *jealousy* and *relational cohesion* – a critical marker of relational health reflecting "*the degree of togetherness and emotional bonding*" between relational partners (Choi 2012, p. 92). In the next step, we present results of our qualitative and quantitative studies, based on the responses of "generation Y" smartphone users (aged 26-40). Our qualitative findings suggest that the loss of attention is a key emotional consequence of partner phubbing, providing evidence for the salience of the smartphone-induced jealousy (Bauminger 2010; Tov-Ruach 1980). These findings justify further testing of our theoretical model. Implications of our findings for IS research and practitioners are discussed in the concluding section. Our focus on "generation Y" demographic segment has several reasons: First, this age cohort is largely composed of heavy smartphone users, who are most likely to use a wide range of the smartphone's functions (Zickuhr 2011; Anderson 2015) and thus might be particularly likely to engage in phubbing. Second, users in the age of 26-40 are more likely to seek meaningful romantic relationships, but at the same time encounter numerous hurdles and ambiguities on their way to do so. Examples include loosing social norms with regard to dating, growing narcissism and unwillingness to compromise characteristic for "generation Y" (Hudson 2015; Reiner 2014). Finally, brought up in the 80s and 90s with gadgets and social media still non-existent, generation Y matured into the era of pervasive technology use and are the first 'always-connected' generation (Bull 2010). Hence, these users might hold conflictual attitudes towards pervasive technologies, when compared to generation Z which is growing with technology as a natural part of their lives **(**Gardasevic 2015**).**

9.2 Theoretical Background

9.2.1 Understanding the concept of jealousy

Protective in nature, jealousy is typically viewed as a blend of negative feelings, including sadness and worry as well as feelings of exclusion and offense (Schmitt et al. 1994). As such, jealousy is often linked to the *loss of exclusive attention*, with a jealous subject fearing to lose his or her position in the relationship (Bauminger 2010; Tov-Ruach 1980). This reaction is natural, since social and romantic relationships universally represent a valuable asset, and hence deserve to be protected (Baumeister and Leary 1995). While multiple theories have tried to address the antecedents and consequences of jealousy, *the dual factor conceptualization* of jealousy has gained particular importance (Hansen 1991). According to this approach,

emergence and strength of the feelings of jealousy are the product of two contributing factors. On the one hand, a jealous subject should perceive the "*partner's involvement with an activity and/or another person as contrary to the definition of relationship*"; on the other hand, the relationship itself should be perceived as valuable (Hansen 1991, p. 214). While commonly discussed in the context of romantic triads (DeSteno et al. 2006, p. 627), jealousy experience is, hence, not solely limited to them. Instead, activities that are subjectively perceived as threatening, e.g. partner spending too much time at work or with friends, may also antagonize the subject, causing jealous feelings to arise.

Extending this approach, Hansen (1991) additionally introduced the concept of "boundary ambiguity", previously advanced by Boss (1987). Focusing on interactions within families, Boss et al. (1990, p. 5) define boundary ambiguity as "*the family not knowing who is in and who is out of the system*". In other words, "*the family may perceive a physically absent member as psychologically present or may perceive a physically present member as psychologically absent*". Especially the latter form may have a high potential to induce jealousy, as a subject might feel threatened by the psychological absence of the partner – a situation that may run contrary to his or her definition of the relationship. For example, immersion into one's smartphone may result in a boundary ambiguity, with the subject perceiving the other partner as psychologically absent, even though physically present. Facing such painful situation, the subject may try to adopt certain coping strategies. For example, one may try to achieve the psychological presence of the partner, which can be achieved by taking the attempts to change partner's behavior. On the other hand, a strategy aimed to achieve the physical absence of the partner is also possible, with the subject resorting to withdrawal, avoidance or separation (Hansen 1991). All in all, jealousy is frequently associated with deteriorations in the relationship health (Andersen et al. 1995; Guerrero and Eloy 1992), as well as an array of other detrimental outcomes oriented towards the self (e.g. reduced self-esteem (Bringle 1981; Buunk 1997)), or the target (e.g. violence (Chiffriller and Hennessy 2007)).

9.2.2 Understanding the role of phubbing in the relational context

Past research has shown that all types of interpersonal relationships may be vulnerable to the interference of technology, which can take the form of "*interruptions in face-to-face conversations to the feelings of intrusion an individual experiences*" (McDaniel and Coyne 2016, p. 85). Owned by 3.4 billion users around the globe (Ericsson Mobility Report 2015), smartphones may represent the technological phenomenon with the distinct potential to

intervene with interpersonal relationships (Billieux 2012). So far, past research has delivered ambiguous results on the role of smartphones and phubbing in the interpersonal domain. On the one hand, smartphones can be used as a way to connect with others, creating favourable feelings of social connectedness (Chen and Katz 2009; Devitt and Roker 2009; Padilla-Walker et al. 2012). For example, serving as a platform for frequent social interaction and exchange of emotional support, smartphones have been shown to promote deeper intimacy between family members (Campbell and Ling 2009). Furthermore, studies report positive influence of smartphones on the quality of professional communication in healthcare (Wu et al. 2011; Whitlow et al. 2014; Wickersham et al. 2015), on socialization of people with disabilities (O'Neill 2015) and children suffering from autism (De Leo and Leroy 2008).

On the other hand, intense engagement with a smartphone inhibits users from fully taking part in their present social surroundings, which may trigger "boundary ambiguity" on the part of others (Hansen 1991). Indeed, a research report revealed that twenty percent of respondents reported that they could not even remember the phone ever being in a different room than they were (Groarke 2014). As such, this present absence can be a reason for conflicts in social relationships (Tertadian 2012; Bernroider et al. 2014), since interpersonal communication is inevitably neglected (Karadag et al. 2015). Furthermore, phubbing has been shown to undermine relational closeness (Przybylski and Weinstein 2013), since accompanying face-to-face communication is of lower quality and less empathetic (Misra et al. 2014). In this way smartphones can be seen as a medium that disconnects conversational partners since one might feel left out as the other person is intensively absorbed with his or her smartphone. While any distraction during the time people spend together may provoke negative feelings, past research evidences that not all interrupters are equal, pointing out the stronger feelings of jealousy towards a social object in contrast to an inanimate object like a book (Hart et al. 2004). Perceiving computers to be "fundamentally social" (Nass et al. 2015, p. 72), users develop a strong emotional attachment towards mobile phones and are experiencing "intimacy with their electronic devices" (McDaniel and Coyne 2016, p. 87 after Turner and Turner 2013; Vincent et al. 2005; Wehmeyer 2007). Thus, we believe smartphones are perceived as heavy intruders in communication, leaving the phubbed party feeling not only deprioritized, but also jealous because of the device's extended functionality with social interaction activities as particularly threatening ones. While this undesirable dynamics has been observed across a variety of social contexts, including parental (Radesky et al. 2014), work (Roberts 2015) and educational (Ling 2000; Campbell 2005) settings, recent reports have sent alarming signals regarding the influence of smartphone use on romantic relationships. Often contrasted with friendships, a

clear distinction of romantic relationships includes physical attraction, sexuality and a deliberate commitment to long-term, exclusive relationships (Hatfield and Rapson 1987; Sternberg 1987; Connolly et al. 1999). Specifically, partner phubbing has been linked to lower relationship satisfaction (McDaniel and Coyne 2016), increased conflict between romantic partners (Coyne et al. 2011; Roberts and David 2016), and lower well-being (McDaniel and Coyne 2016; Roberts and David 2016). Especially partners strongly attached to their significant other are prone to experience conflictual emotions when it comes to the smartphone addiction of the latter (Roberts and David 2016).

While this dynamics may have far-reaching detrimental implications in the long-run, the mechanisms behind the negative association between partner phubbing and markers of relationship health (e.g. relational cohesion, relationship satisfaction, level of conflict) are still unclear. Considering that partner phubbing inevitably leads to the loss of exclusive attention towards the other party – the core component of the *jealousy* experience (Lazarus 1991; Tov-Ruach 1980) - it might be that it is not partner phubbing per se that leads towards relationship dissatisfaction, but rather these are the feelings of *jealousy* this behaviour is triggering that are responsible for this unwanted outcome.

Indeed, while the relationship between partner phubbing and feelings of jealousy has not been explored so far, studies from other related contexts offer solid support for the salience of the jealousy experience in the context of Social Media use (Muscanell et al. 2013; Fox et al. 2014; Tokunaga 2011; Phillips 2009) – the focal activity of smartphone users (Smith 2015; Perez 2015). For example, the time a partner spends on Facebook has been linked to the heighted feeling of jealousy (Muise et al. 2009). Furthermore, experience of jealousy has been associated with such (somewhat unethical) behaviours, as partner's surveillance (Tokunaga 2011; Phillips 2009). Building on these insights, a theoretical model that focuses on the role of jealousy experience as a mechanism in the link between partner's smartphone use and relationship cohesion is developed in the following section.

9.3 Towards a Theoretical Model

9.3.1 The role of partner phubbing in evoking jealousy

While little scientific evidence is available, initial findings from market research hint at the increasingly important role of smartphones in eliciting jealousy among romantic partners (Waterloo 2013; E.On Energie Deutschland 2013). Especially "Generation Y" users may be

vulnerable to this threat, since they exhibit high levels of addiction with regard to their smartphone use. For example, such users are likely to exhibit elevated anxiety levels if unable to regularly check their smartphones, reporting to feel "as if a part of them is missing" (Cisco 2014). Considering their multi-faceted applicability, smartphones may tap into a number of components inherent in the emotional experience of jealousy. First, busy with his or her smartphone, a partner may be unfocused and less responsive with regard to the other party. Experienced in a recurrent pattern, this situation is likely to translate into the perception of "attention loss", which represents one of the core components of jealousy experience (Lazarus 1991; Ben-Ze'ev 2010). Moreover, the smartphone can be perceived as a threat to one's exclusive position in the partner's life, which also reflects an important element of the jealousy experience (e.g. Lazarus 1991; Ben-Ze'ev 2010; Hart 2010; Parker et al. 2010; Tov-Ruach 1980). Additionally, since smartphone use is increasingly associated with the usage of social networking sites, like Facebook, or location-based dating apps (Smith 2015; Perez 2015), a partner might fear competition from other parties. Indeed, male users of Facebook – one of the most popular utilities on smartphones (Smith 2015) – have reported dating as an important reason to join and continue using this site (Bonds-Raacke and Raacke 2010; Thelwall 2008). Furthermore, a recent study has shown that smartphones are affecting the dating culture, with 44% of men and 37% of women in the study sample claiming that smartphones make it easier "*to flirt and get to know someone*" (Amplitude Research 2013). This is in line with the most recent research evidence that suggests that the smartphone-addiction of one's partner can affect interpersonal trust in a negative way and may cause people to put their partner's faithfulness into question (McCormack 2015) – a common consequence of jealousy (Bevan and Samter 2004). Taken together, we hypothesize that:

Hypothesis 1 (H1): *The intensity of partner's smartphone use is positively associated with the feelings of jealousy experienced by the other party*.

9.3.2 The moderating role of personal smartphone use

While hypothesis 1 suggests an association between the intensity of partner's smartphone use and the feelings of jealousy, we argue that the strength of this relationship might be moderated by the intensity of the smartphone usage of the significant other. Indeed, the study of Roberts and David (2016) has shown that users who are strongly attached towards their partner are more likely to experience conflict as a result of partner phubbing. Similar outcomes have been observed for the jealousy-induced surveillance behavior, with strongly attached users being

more likely to engage in this activity (Fox and Warber 2014). Moreover, users who themselves use the internet as a leisure time activity appear to be more accepting towards their partner' involvement with phubbing (Klein 2014). Evidently, partner phubbing is experienced differently when the significant other engages in this activity as well, leading him or her to be more likely to find justification and reasons for this activity. Taken together we argue that:

Hypothesis 1a (H1a): *The relationship between the intensity of partner's smartphone use and feelings of jealousy is moderated by the intensity of the smartphone use by the other party.*

9.3.3 The role of jealousy in relational cohesion

Serving to protect romantic bonds (Newberry 2010), jealousy can in some cases promote more satisfying relationships (Guerrero et al. 1995). Nonetheless, jealousy is often seen as a cause of major relational problems, contributing to aggression and conflict between partners (Guerrero et al. 1995). Indeed, involving a blend of negative emotions, such as anger, sadness, fear and feelings of being hurt and excluded (e.g. Draghi-Lorenz 2010; Legerstee et al. 2010; Schmitt et al. 1994), jealousy is "a major contributor to relationship dissatisfaction" (Parker et al. 2010, p. 526; Andersen et al. 1995; Bringle et al. 1979) and is predominantly expressed in a negative way. Among others, jealousy can lead to active distancing from the partner (i.e. pulling away from him or her); may involve the jealous subject suffering in silence or displaying such unfavorable emotions as frustration, sadness or anger towards the partner (Bevan and Samter 2004). Further, giving another the 'silent treatment', sulking, inducing the feelings of guilt (Parker et al. 2010), and being passive aggressive (Adams 2012) have been identified as common consequences of jealousy experience. Clearly, these expressions threaten to undermine relationship satisfaction, including its related components such as relational cohesion (Spanier 1976). Indeed, "*broadly defined as the degree of togetherness and emotional bonding*" that relational partners have towards each other (Choi 2012, p. 92), cohesion is likely to be undermined by the experience of jealousy, as it causes partners to avoid and, consequently, spend less time with each other, thereby interfering with their ability and desire to find time for common activities and conversations (Spanier 1976). Taken together, we argue that:

Hypotheses 2 (H2): *Feelings of jealousy are negatively associated with perceptions of relational cohesion.*

9.3.4 The role of jealousy as a mediator

So far, several studies have linked smartphone use with conflict (Tertadian 2012; McDaniel and Coyne 2014) and relationship dissatisfaction (McDaniel and Coyne 2016; Roberts and David 2016) in romantic relationships. Moreover, additional evidence suggests that the mere presence of a mobile phone can decrease closeness as well as the quality of conversation and connection in dyadic relationships (e.g. Przybylski and Weinstein 2012). While these findings draw a daunting picture of the future of romance in a smartphone-enabled society at large, little is known about the mechanisms behind these outcomes. Tapping into this critical research question, the study of Klein (2014) illustrates that a high percentage of smartphone-users assume that the usage of one's smartphone in the presence of the other may decrease attention towards that person. Since loss of attention and feelings of exclusivity are at the core of jealousy experience (e.g. Lazarus 1991; Ben-Ze'ev 2010; Hart 2010; Parker et al. 2010; Tov-Ruach 1980), and jealousy itself is associated with an array of negative relational outcomes, it can be assumed that this is not the usage of the smartphone per se that causes the undesirable outcomes typically attributed to partner phubbing, but these are the feelings of jealousy this usage is evoking, which are responsible for such unwanted relational consequences, as diminishing cohesion between romantic partners. Hence, we hypothesize that:

Hypothesis 3 (H3): *Feelings of jealousy mediate the relationship between the intensity of partner's smartphone use and perceptions of relational cohesion.*

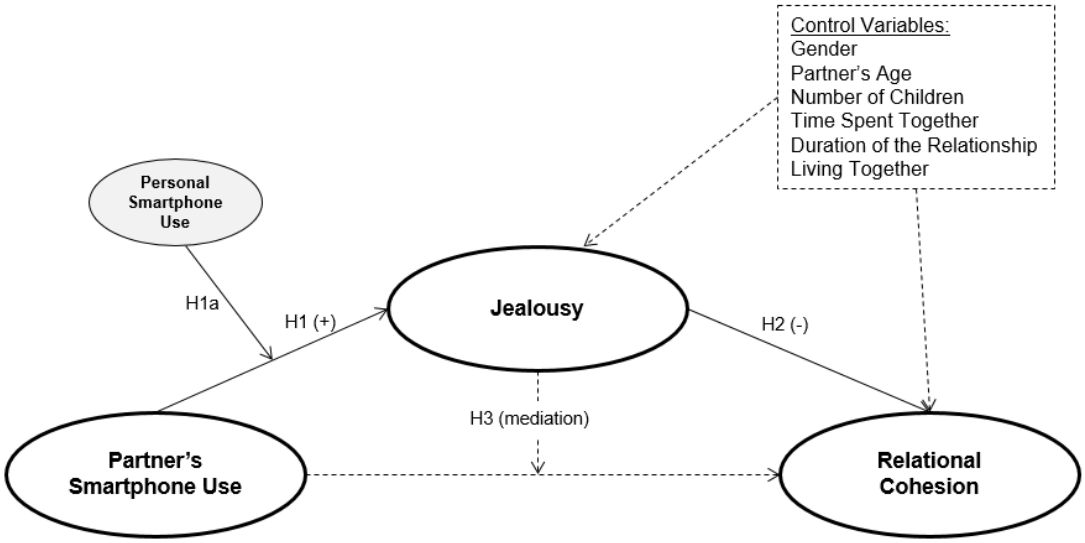


Figure 25. Research model

Figure 25 summarizes relationships advanced above in a theoretical model. In addition to focal variables, the model includes control variables that have been shown to influence focal

constructs in the past research. Specifically, participant gender, partner's age, number of children, time respondent spends with a partner, duration of a relationship, and a living arrangement were included as controls.

9.4 Methodology and Results

9.4.1 Survey design and flow

To test the advanced hypotheses, a study involving questions for qualitative (here referred to as Study 1) and quantitative (here referred to as Study 2) analysis was conducted. While qualitative questions were included to establish the salience of jealousy feelings in response to partner phubbing (Study 1), scale-based questions posed in Study 2 aimed to explore the relationships proposed in our theoretical model (see Figure 25). Importantly, both studies were presented to the respondents in one online survey. To reduce cognitive overload, questions relating to Study 1 and Study 2 were psychologically separated using a cover story (see Ayyagari et al. 2011).

9.4.2 Sampling

Respondents were invited to participate in the survey using the mailing list of a large German university and by posting in Facebook groups in the fall of 2015. 40 Amazon.de gift cards (5 Euro value each) were raffled as an incentive to take part in the study. In total, 1475 people completed the survey (completion rate 64.9%). To ensure relevance, observations were cleaned according to the following criteria (resulting in n=1267): 1) a respondent owns a smartphone; 2) a respondent is involved in a romantic relationship; 3) respondent's partner owns a smartphone. Next, 212 observations with a session duration of less than 5 minutes were excluded (mean processing time of the survey comprised 16 minutes and 34 seconds). Finally, considering our focus on the "generation Y", only heterosexual respondents at the age of 26-40 were considered, resulting in a final dataset of 286 observations.

With 64.0%, female respondents are somewhat overrepresented in our sample (male: 36.0%). An overwhelming majority of respondents (79.7%) belongs to the 26-30 age cohort, nearly 17.5% are 31-35 years old and 2.8% of respondents are at the age of 36-40. 76.2% of respondent's partners also belong to generation Y and are 26-40 years old, 18.9% of partners are slightly younger and are 21-25 years old. Approximately 64.7% of respondents have completed their higher education (36.4% have Bachelor and 28.3% have Master Degree). 77.3% of the sample has a student status, 11.9% are employed full-time and 17.8% work part-

time. Half of the couples (50.3%) have a common home and 13.6% live "partly" together. Only one respondent claims to have no children, 84.6% of respondents have a child, 7.7% have two children and the rest 7.4% have families with 3 or more children

9.4.3 Results - Study 1: Exploring emotions and reactions triggered by partner phubbing

Considering the lack of studies directly addressing the concept of jealousy in the context of smartphone use, the goal of qualitative questions captured in Study 1 was to explore the salience of the jealousy experience as a reaction to partner phubbing. To achieve this goal, respondents were first asked: "*Think of the last time your partner was using his/her smartphone for too long in your presence. In which situation did it happen?*" Specifying the particular situation (i.e. "the last time") was purposed to decrease the cognitive load and make it easier for a respondent to recall the circumstances and the feelings at that very moment. Assuming that users may experience cases of excessive smartphone use by a partner regularly, this technique allows to reduce the question-answering process by helping the respondent to focus on a particular situation with the highest recall. About one-third of respondents (33.6%) claimed that the incident happened when spending time together at home, 19.6% recalled their partner overusing the smartphone in bed before going to sleep. Further, partner phubbing is noticeable when a couple is having a meal together at home (10.8%), when being on the way in a public transport or in a car (9.8%), and when going out (4.5%). Other occasions were less prominent, with respondents recalling watching TV (2.1%), taking a walk (2.4%), or shopping (0.7%). 22 respondents (8.4%) claimed that their partner has never used the smartphone for too long.

Next, respondents were asked to describe their emotions in this particular situation: "*How have you felt in this regard? Why?*" In total, 252 open answers were provided (34 missing values, correspondingly) and were used for qualitative analyses. Since research does not provide a universal and systematic scheme for coding emotions, inductive theory-driven content analysis was performed by screening the first 100 responses (Russel and Barret 1999). When sorting, the schematic map of core affect offered by Russel and Barret (1999) was considered since it describes emotions in terms of two consciously accessible elemental processes. The first one - pleasure-displeasure dimension - subjectively summarizes how well a person is doing. The second - activation-deactivation dimension - is related to the level of mobilization or energy. Different possible combinations of two dimensions form a comprehensive set that encompasses all major prototypical emotions (Russel and Barrett 1999). As a result, the following mutually exclusive seven categories have been identified: 1) *perceived loss of attention*; 2) *anger*; 3)

sadness/suffering; 4) *boredom*; 5) *neutral/indifferent*; 6) *positive/happiness*; and 7) *other*. In the map of Russel and Barret, *positive/happiness* category would be described by pleasant/active core effect; *anger* as unpleasant/active core effect; *perceived loss of attention*, *sadness/suffering* and *boredom* fall into unpleasant/deactivation quadrant; and *neutral/indifferent* would be placed into the pleasant/deactivation quadrant. Following derived classification scheme (Table 1), 252 responses were coded by two coders independently (coding more than one emotion per response was possible), with Inter-Coder Reliability measured by Krippendorff's Alpha reaching 0.914, which satisfies the threshold of 0.8 (Landis and Koch, 1977). The final decision was taken by consensus. Table 36 presents the summary of the results for the overall sample; and female / male subsamples with a corresponding Wilcoxon rank-sum test used to check for gender-related differences.

Emotion	Key subcategories from open coding	Share of respondents			Wilcoxon test (p>|z|)
		Overall (n=252)	Male (n=90)	Female (n=162)	
Perceived loss of attention	Feeling neglected, unnoticed, less important, turned off, lonely, uninteresting, isolated, rejected, unnecessary, jealous, unconsidered, excluded, dismissed.	28.6%	30.0%	27.8%	0.52
Anger	Feeling irritated, annoyed, disturbed, angry, nervous, under pressure, indignant, displeased, resentful, aggravated.	19.4%	14.4%	22.2%	0.20
Sadness / Suffering	Feeling unhappy, uncomfortable, stupid, unsatisfied, offended, unsure, insecure, worried, bad, not nice, hurt, disrespected, insulted.	11.1%	8.9%	12.3%	0.49
Boredom	Feeling bored.	3.2%	4.4%	2.5%	0.34
Neutral/ indifferent	Feeling ok, no problem, neutral, normal, understanding, indifferent, no matter, unchanged, undisturbed, unaffected, not caring, nothing specific, neither positive nor negative.	38.1%	33.3%	40.7%	0.42
Positive	Feeling good, cool, laugh, super, perfect, glad.	4.4%	7.8%	2.5%	0.04
Other	Feeling curious, tired.	4.8%	6.7%	3.7%	0.24

Table 36. Emotions following partner phubbing

Our results suggest that 38.1% of respondents have *neutral* feelings or are *indifferent;* while 4.4% of respondents associate partner phubbing with *positive* emotions. Nonetheless, for the majority of the sample (62.3%) excessive smartphone engagement of a partner was associated with negative jealousy-related feelings. Specifically, 28.6% of the respondents in the overall sample were disturbed by the *loss of partner's attention* – a key element of the jealousy experience (Lazarus 1991; Ben-Ze'ev 2010), reporting feeling neglected, unnoticed, less important, turned off, lonely, uninteresting, or isolated, just to name a few. 19.4% felt *angry*, irritated, annoyed, or disturbed amongst other things; and 11.1% of respondents reported feeling *sad* as a result of such behaviour. While only 2 respondents directly described their experience as that of jealousy, the set of negative emotional outcomes provide solid evidence for the salience of jealousy as an emotional reaction to partner phubbing. Indeed, past research has established that anger and sadness are inherent in the experience of jealousy (Bers and Rodin

1984; Clanton and Smith 1977); with other authors focusing on the loss of exclusive attention as a key component of jealous feelings (Lazarus 1991; Ben-Ze'ev 2010).

In the next step, to enhance understanding of the footprint excessive smartphone use leaves on romantic relationships, a follow-up question was posed aiming to elicit coping strategies that are adopted in response to partner phubbing: "*What was your reaction in this situation?" [referring to the situation when the smartphone was overused the last time]*. Supported by the theoretical framework by Hansen (1991), the coding scheme was developed on the basis of Rusbult et al.'s (1986) classification that distinguishes between four types of response to dissatisfaction: exit, voice, loyalty, and neglect (EVLN), and can be described by two primary dimensions: active versus passive, and constructive versus deconstructive. Similar to the previous coding procedure, the first 100 responses were initially screened. For the purpose of precision it was decided to distinguish between the following categories: 1) *voice/intervention*; 2) *voice/curiosity*; 3) *exit/mirror*; 4) *exit/other*; 5) *loyalty*; 6) *feeling negative*; 7) *no reaction*; and 8) *other*. *Voice* measures include expressions of dissatisfaction, with an accompanying attempt to change the situation. Specifically, the category *voice/intervention* subsumes requests to stop using the smartphone; while the category *voice/curiosity* involves such reactions as showing active interest in what is going on in the gadget, e.g. by asking what exactly the partner is doing, who is writing, or looking directly at the partner's smartphone screen. *Exit* strategy implies the dissatisfied person ending the interaction, quitting the partner, or choosing another occupation. We distinguish between the case when a person mirrors the activity of the partner and turns to his or her own smartphone (*exit/mirror*); and when a person pursues another activity beyond the smartphone (*exit/other*). The *loyalty* strategy implies tolerance towards the behaviour of the partner, with a respondent playing a role of passive observer, who does not have an intention to interrupt partner's activity on the smartphone. The category *negative/hurt* summarizes answers that imply some degree of resentment, feelings of being hurt, or annoyance as a result of partner's smartphone overuse. A separate group was created for responses stating *no reaction* at all. In total, 247 answers were coded (39 missing values) from 90 men and 157 female users by two independent coders (coding more than one reaction per response was possible). Resulting Inter-Coder Reliability measured by Krippendorff's Alpha reached 0.727, suggesting an acceptable level of agreement between the coders. The final decision of the code assignment was taken by consensus.

We observe that actively intervening with the usage of the smartphone by a partner is the most popular strategy, exercised by 27.1% of the respondents in the overall sample

(*voice/intervention*). Next in importance are such strategies as *loyalty* (22.3%) and expressing *no reaction* (22.3%). Interestingly, 13% of the respondents admitted to start doing other things in this situation (*exit/other*), which typically includes watching TV, going to sleep, doing household duties, or reading. At the same time, 6.9% of the respondents copied the smartphone immersion of a partner (*exit/mirror*), suggesting that smartphone use by romantic partners might be contagious and also follow the "tit-for-tat" pattern. Interestingly, such strategy is used by men twice as often as by women, even though this difference is not statistically significant (p-value>0.05, according to Wilcoxon rank-sum (Mann-Whitney) test). *Curiosity was voiced* actively by 7.3% of the respondents who tried to find out what activity their partner was engaged in, who his or her conversational partner was, and what issue it was about. 7.3% of the respondents reported feeling "*negative/hurt*" without implying an active interruption of the partner. All in all, we observe that smartphone overuse provided a rich basis for conflictual situations, with a large share of respondents trying to interfere with this usage or resenting it. As such, the strategies users adopted are typical for the jealousy experience, as described in the past research (Hansen 1991).

Behavioral strategy	Key subcategories from open coding	Share of respondents			Wilcoxon test (p>|z|)
		Overall (n=248)	Male (n=90)	Female (n=157)	
Voice/ intervention	Active intervention with, or prevention of the smartphone use; making requests to take the smartphone away / stop using it.	27.1%	23.3%	29.3%	0.311
Voice/ curiosity	Expression of clear curiosity; suspicion about the use of the smartphone; looking at the smartphone screen of the partner.	7.3%	5.6%	8.3%	0.429
Exit/ mirror	Reproducing the partner's behaviour, i.e. involvement with one's own smartphone.	6.9%	10.0%	5.1%	0.144
Exit/ other	Choosing another occupation beyond the smartphone.	13.0%	12.2%	13.4%	0.795
Loyalty	Showing patience towards the use of the smartphone by a partner; waiting, understanding, tolerance.	22.3%	28.9%	18.5%	0.059
Feeling negative/ hurt	Feeling offended, insulted; experiencing resentment, annoyance, anger with the situation / partner.	7.3%	7.8%	7.0%	0.823
No reaction	No specific behavioural response	22.3%	20.0%	23.6%	0.518
Other	E.g. not interpretable responses	1.2%	1.1%	1.3%	0.911

Table 37. Reactions following partner phubbing

Providing evidence for the prevalence of jealousy as an emotional response to partner phubbing, as well as its conflict-producing nature, qualitative insights obtained in Study 1 provide a solid basis for further quantitative investigation of the role of jealousy in the relationship between partner's use of a smartphone and relational cohesion of partners as a couple (see Figure 25).

9.4.4 Results - Study 2: Understanding the role of jealousy

9.4.4.1 Survey Design

While we relied on pre-tested measures, where possible, some scales had to be developed new or slightly modified to fit the context of our study. Operationalization of *relational cohesion* was based on a dyadic adjustment scale proposed by Spanier (1976) including the following items: 1) you can calmly discuss something interesting; 2) you laugh together; 3) you exchange thoughts openly with each other; 4) you practice different activities together 5) you find time for each other 6) you are happy in your relationship (1=never; 5=always). To capture *jealousy*, the scale of Schmitt et al. (1994) was adopted, that reflected jealousy as a mix of five emotions: sadness, worry and anger as well as feelings of being excluded and offended. Specifically, respondents were asked to specify "to what extent do you have the following feelings when your partner actively uses the smartphone for too long in your presence?" with items including: 1) it makes me sad; 2) it worries me; 3) I feel excluded; 4) it annoys me; 5) it offends me (1=strongly disagree; 7=strongly agree | "not applicable"). As such, this methodology corresponds to conceptualization of jealousy as a blend of different emotions (Lazarus 1977; Hansen 1991). The measure of *partner's smartphone use* was adopted from the cell phone addiction scale of Roberts et al. (2014, p. 256) and included the following items: 1) my partner looks agitated when the smartphone is not in sight; 2) my partner looks nervous when the smartphone battery is almost depleted; 3) my partner spends more and more time on the smartphone; 4) my partner spends more time on the smartphone as he/she should 5) the smartphone is an important part in the life of my partner (1=strongly disagree; 7=strongly agree). Across constructs, the sequence of statements was randomized for each participant. Initially developed in English, the scales were then carefully translated into German. All constructs were measured as reflective. A net sample of 286 observations was included into our analysis (for demographics see section 4.2).

9.4.4.2 Control variables

To correctly test the hypothesized relations, several control variables were included into the model. First, considering that emotions are subjective experiences (Barrett 2006) and the assessment of partner's smartphone usage may depend on one's own behaviour (H1a), *personal smartphone use* was measured by asking "How often do you turn to your smartphone on average per day?" on an 8-point scale: 1= less often than 2 times a day; 8=every 5 minutes (my

smartphone is always in my hand). Further, to account for possible bias inherent in a different nature of romantic relationships, we controlled for the *time spent together: "*How much time do you and your partner spend together? (1=practically no time; 6=very much time); whether the couple *lives together* (1=no; 2=partly; 3=yes), *duration of the relationship* (1=less than a year; 6=more than 5 years) and *the number of children* (1=no; 5=more than three). Finally, *respondent's gender* (1=female; 2=male) was included to account for possible differences in gender perceptions; and *partner's age* was controlled for since the latter may be responsible for the so-called "generation gap" - differences of attitudes potentially leading to misunderstanding between people from different age cohorts (VanSlyke 2003).

9.4.4.3 Evaluation of the research model

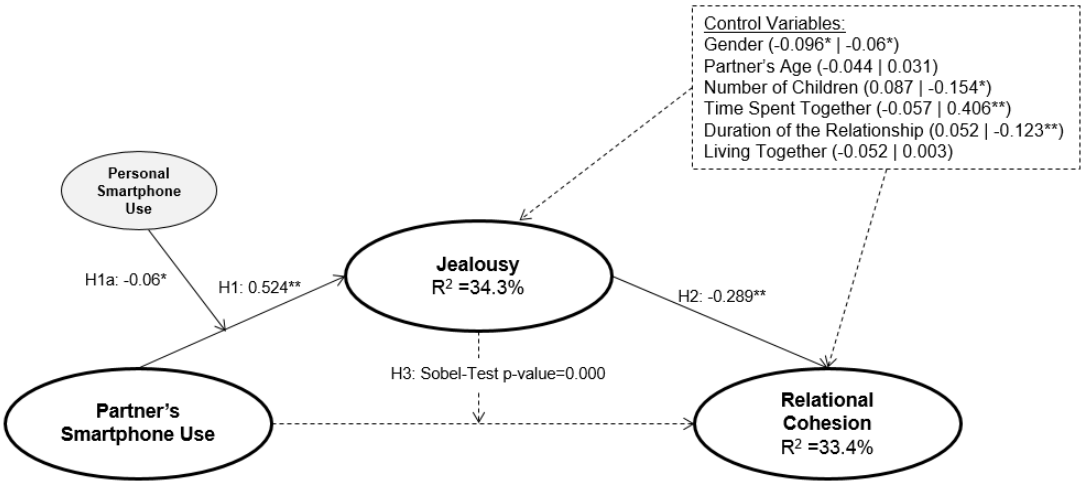
Our study is the first to test the relationship between partner phubbing, feelings of jealousy and relational cohesion, which makes our research exploratory in nature. Hence, the partial least squares (PLS) approach was chosen as a method of statistical analysis (Fornell and Bookstein 1982). Moreover, non-normality of our data and a limited sample size strengthen the case for a variance-based type of evaluation. Hence, SmartPLS 3.0 software was used (Ringle et al. 2015). Evaluation of our research model was done in two steps; the estimation of the Measurement Model (MM) was followed by the assessment of the Structural Model (SM). The MM was evaluated by verifying the criteria for Convergent Validity (CV) and Discriminant Validity (DV). To ensure CV, parameters for Indicator Reliability (IR), Composite Reliability (CR) and Average Variance Extracted (AVE) were assessed. For IR, constructs should explain at least 50 % of the variance of their respective indicators. Items with factor loadings below 0.4 should be removed from the model (Homburg and Giering 1996). The overwhelming majority of items in all models satisfied the former strict criteria, with most item loadings exceeding the level of 0.7 (Hulland 1999). Only 4 items measuring *partner's smartphone use* and *relational cohesion* had item loadings closely approximating the required threshold (0.692; 0.685 | 0.691; 0.699). Taken together, IR was assured. Further, CR values for all constructs were higher than the required level of 0.7 (Hulland 1999), as shown in Table 3. The AVE values for all measured constructs by far surpassed the threshold level of 0.5 (Fornell and Larcker, 1981). Finally, Cronbach's Alpha (CA), a measure of Internal Consistency of construct scales, was higher than the required threshold of 0.7 for all constructs (Nunnally 1978). Taken together, CV can be assumed. Next, DV was assessed by ensuring that the square root of AVE for each construct was higher than the correlation between this construct and any other construct in the model

(Hulland 1999). This requirement was fulfilled for all constructs in our model. Taken together, our MM is well-specified.

Construct	AVE	CR	CA
Partner's Smartphone Use	0.617	0.889	0.848
Jealousy	0.750	0.937	0.916
Relational Cohesion	0.555	0.882	0.840
Partner's Smartphone Use * Personal Smartphone Use	0.617	0.889	0.871

Table 38. Quality criteria of the latent constructs

Next, the Structural Model (SM) was assessed as summarized in Figure 26. Significance of path coefficients was determined via a bootstrapping procedure. We find that, *partner's smartphone use* is positively associated with the degree of *jealousy* experienced by the other party (the respondent) *(H1 supported)*. Moreover, the strength of this link is moderated by the *personal smartphone use* of the respondent, with low usage intensity of the respondent associated with heightened *jealousy* perceptions in response to partner's use (*H1a supported*). Furthermore, *jealousy* exerts a significant negative impact on respondent's perceptions of relational cohesion *(H2 supported)*. Among the *six control variables* we tested, only *gender* was associated with the perceptions *of jealousy*, with female users being more jealous in response to partner phubbing than male users.



*significance: * at 5%; ** at 1% or lower*

Figure 26. Results of the model testing

In terms of explanatory power, *jealousy* and six control variables together explain 33.4% of variance in the respondent's perceptions of *relational cohesion* – a noteworthy outcome, considering that a multitude of other factors can strongly influence this construct as well. Overall, this magnitude of explanatory power suggests that smartphone-induced *jealousy* significantly contributes to the relational health of "generation Y" users. For *jealousy*, R^2 has

reached 34.3%. Finally, we hypothesized that *jealousy acts as a mediator* between the intensity of *partner's smartphone use* and *relational cohesion*. To test for this effect, the direct impact of the independent variable – *partner's smartphone use* – on *relational cohesion* was tested first, following (Baron and Kenny 1986). This link was significant and negative *(b= -0.221**)*. However, once the *jealousy* construct was added to the model, the previously significant direct link between *partner's smartphone use* and *relational cohesion* disappeared *(b= -0.071; n.s.)* Furthermore, the *Sobel Test* statistic, typically used to test for mediation, was also significant (*p=0.000*) (Preacher and Leonardelli 2010-2015). Taken together, we conclude that jealousy *fully mediates* the relationship between *partner's smartphone use* and *relational cohesion (H3 supported).*

9.5 Discussion and Managerial Implications

Being an integral part of everyday life for many users, smartphones have the potential to permeate all types of interpersonal settings, including romantic relationships. So far, past research has primarily reported unfavourable consequences of phubbing in the romantic context, establishing smartphones as the cause of conflict (e.g., Roberts and David 2016), lower relationship satisfaction and reduced well-being (e.g. McDaniel and Coyne 2016). Contributing to this stream of research, the primary goal of this study was to uncover the mechanism behind this detrimental dynamics. We advance existing theories by proposing and validating a new set of dependences that offer a novel perspective on the undesirable impact of partner phubbing on romantic relationships. We find that observing a partner's smartphone activity may create "boundary ambiguity" (Boss 1987), leading to heightened feelings of jealousy, which, in turn, may reduce couple's relational cohesion. Moreover, jealousy plays a mediating role in the relationship between partner's smartphone use and relational cohesion, acting as a mechanism behind this undesirable link. Our qualitative results also emphasize the presence and salience of jealousy feelings as a response to partner phubbing. Specifically, "generation Y" respondents report a plethora of negative jealousy-related emotions as a result of their partner's latest phubbing episode (Schmitt 1994; Tov-Ruach 1980; Lazarus 1991), including perceived loss of attention, anger and sadness. As such, our findings challenge a frequently promoted positive view of smartphones as a medium for around-the-clock "connectedness" (Levitas 2013). In fact, our study draws attention to the often overlooked negative developments, with smartphones impeding emotional bonding and disconnecting partners.

Our findings have implications for IS practitioners including smartphone producers, mobile app providers and other affiliated stakeholders. Indeed, the problem of excessive and, as confirmed by our study, detrimental smartphone use challenges app developers with a need for new innovative solutions. Possible remedies may take the form of an application or special settings, monitoring and managing phubbing activities (Hill 2015). Moreover, with over 85% of "generation Y" users owning a smartphone (Nielsen 2014), their impact on users' romantic relationships has meaningful social implications. Since users might be unaware about the ruining impact of phubbing on their romantic relationships, campaigns raising public awareness on this issue might be advisable.

The current study has several limitations. Since most respondents came from Germany, our results are especially valid for countries with a high level of smartphone adoption. Moreover, since partner's smartphone use was measured as a subjective perception of a respondent, future research may apply a more objective assessment of this construct. Further, extending the sample with a broader range of age cohorts may open the opportunity for between-generation comparisons, helping to disentangle psychological mechanisms behind phubbing on a larger scale. Finally, future studies might consider including a social desirability scale to control for the honesty of the responses provided by participants.

10 Thesis Contributions and Conclusion

10.1 Theoretical Contributions

Overall, the findings across the seven articles contribute to IS, social media and sharing economy literature by enhancing our understanding of the implications of the ICT-enabled connectedness. The studies are based on two different contexts, and therefore different literature streams, which determine the order of presentation for the main theoretical contributions.

Addressing ICT-enabled connectedness on the sharing economy platforms, we advanced our understanding of uncertainty and its guiding role in online consumer's behavior. Paper A is among the first articles to point out the uniqueness of sharing transactions and the necessity to further scrutinize it beyond the e-commerce lens. We discover that sharing does not imply transfer of ownership, unlike online purchases, and entails joint consumption, unlike assess-based transactions. These singularities transform the nature of uncertainty experienced by participants and are considered in their preferences. Against this background, the thesis contributes on the following points.

We extend the diagnostic research stream by creating an uncertainty model exclusive to sharing platforms and find out that supplier, resource, and collaboration uncertainty are a severe barrier to the willingness to accept an offer. Moreover, we provide rationales for our conceptualization, which was disregarded before. Peculiarities of sharing activities inspired us to theorize uncertainty, previously recognized as a bifactorial qualifier of consumers' preferences, as a trifactorial construct. Besides supplier and resource uncertainty, approved by the e-commerce research, we anticipate the prognostic power of collaboration uncertainty concerning consumers' engagement and price premiums. Illustrating the validity of supplier and resource uncertainty as predictors of transaction intention, we support past investigations (e.g., Chatterjee and Datta 2008; Dimoka and Pavlou 2008; Dimoka et al. 2012; Luo et al. 2012). Moreover, our results also witness the significance of collaboration as a novel uncertainty dimension participants experience on sharing platforms. Our findings suggest that supplier uncertainty and collaboration uncertainty impair willingness to accept an offer, while resource uncertainty appeared to be inessential. Price premiums are sensitive to supplier and resource uncertainty, with collaboration uncertainty not significantly decreasing monetary bonuses.

Second, we upgrade the prescriptive research by demonstrating that uncertainty on sharing platforms can be combatted with the relevant information cues. So far, the effect of cues on the

outcomes was tested either directly (e.g., Benlian and Hess 2011; Li et al. 2009), or as the uncertainty mediator only in e-commerce domain (e.g., Chatterjee and Datta 2008; Dimoka and Pavlou 2008; Huang et al. 2005; Luo et al. 2012). Thus, our findings (Paper A and Paper B) add to past articles on the signaling mechanisms by elucidating how information cues drive positive outcomes via uncertainty reduction. Specifically, supplier-related cues and collaboration-related cues are revealed to lessen uncertainty and increase alacrity to share, whilst resource-related cues are marginal. Notwithstanding, together with supplier-related prompts, resource-related cues are divulged as prospective generators of price premiums. By discerning two KPIs of a sharing transaction (i.e., willingness to accept and price premiums), we present a sophisticated model that captures the essence of uncertainty in the sharing arrangements.

Reversing the perspective, Paper E affirms the receptivity of suppliers for the cues sent from the consumer's side. Hence, advancing our understanding of the link between photographic self-disclosure, social attractiveness and the probability to be accepted as a guest, we contribute to the social media impression management branch of IS research in general (Van Der Heide et al. 2012; Tifferet and Vilnai-Yavetz 2018) and sharing economy in particular (Ert et al. 2016, Fagerstrøm et al. 2017).

Further, Paper C and Paper D complement IS research on service recovery management. Since prior studies focused on online shopping (e.g., Kuo and Wu 2012; Harris et al. 2006, Chang at al. 2015), we add value by focussing on the impact of negative reviews and suppliers' response strategies for future sharing transactions. Counter to the existing literature (Lee et al. 2008; Vermeulen and Seegers 2009), we find only partial support for the impact of review severity. Corroborating confession/apology as the safest option, we again add to prescriptive research and outline that under the condition of high controllability, consumers' trust may be gained by applying the deny strategy. When the matter of dissatisfaction is beyond the control of the host, our analysis posits that an excuse together with attributing responsibility to a third party increases trust perceptions. An attempt to deny the issue does not work out.

Approaching ICT-enabled connectedness in the communication context, we enrich IS studies on the "dark side" of technology use on three fronts (Paper F and Paper G). First, our descriptive analytics based on open-ended responses and observations uncover a high frequency of phubbing. We observe that problematic smartphone use provides a rich basis for conflicts, with a large proportion of the neglected partners trying to intervene in this usage or resenting it.

Second, we refine the diagnostic research stream by modeling the mechanisms behind the unfavorable consequences of phubbing. In contrast to past research which establishes the mediating role of conflict a smartphone causes (e.g., Roberts and David 2016; McDaniel and Coyne 2014), Paper G suggests jealousy to be the trigger of reduced cohesion for romantic partners. In the academic environment, the harmful effects of smartphone use during lectures happen through shrinking visual and auditory attention (Paper F) consistent with learning theory (Dunn 1984; Reinert 1976).

Third, we advance prescriptive research by suggesting a range of coping behaviors for the education context. Students are hostile to restrictions and rather see opportunities in new monitoring applications or entertaining study-related tasks to be completed on their smartphones.

Taking a more abstract perspective, this dissertation enhances our understanding of the far-reaching consequences of ICT-enabled connectedness in the two complex and evolving contexts of sharing platforms and communication. On top of that, compelling empirical evidence certifies our theoretical contributions. Still, we hope that these findings will be tested in other settings to spark the academic discourse about sharing platforms and technology-mediated communication as well as the assessment of their sustainability.

10.2 Practical Contributions

Apart from the theoretical contributions, there are several practical recommendations to be deducted from the studies. We will group them by stakeholders and present them separately for each context.

In the sharing economy context, there are some insights relevant to platform providers. First, Paper A demonstrates that various facets of uncertainty may hamper the transaction intensity – a critical outcome since online sharing marketplaces mainly profit from commission for their matching function. Hence, platforms are advised to rely on information cues to lessen the adverse effects of information asymmetry. More precisely, cues that inform about supplier competencies (e.g., driving/hosting style, experience) and identity (e.g., verified personality) as well as about sharing companions (e.g., who they are, their interests and preferences, level of sociability) promise to increase turnover significantly. To maintain the status quo in case of negative consumer judgments, Paper C and Paper D confirm the necessity of a “response” option on the supply side to prevent future customer churn. In Paper E, we outline the features of socially attractive profile pictures. Platform providers are thus motivated to guide users

towards presenting themselves through a "proper" virtual portrait, which induces transactions. Employing the signaling mechanism above is prudent for platforms which target highest possible acceptance rates.

Further, Paper A and Paper B provide insight to sharing platforms on how to optimally amend the design of information cue mechanisms. Since participants express a higher willingness to pay for offerings that unveil information about suppliers' credibility, as well as detailed resource descriptions and verifications, ridesharing (covered in Paper A) and accommodation sharing (covered in Paper B) platforms can seek to monetize this insight by extending an existing palette of uncertainty mitigating signals.

The practical contributions for the resource owners on the sharing platforms are twofold. First, they are encouraged to disclose their own skills, experience and personality as well as the characteristics of the asset they share to stand out and instill confidence in co-sharers. The latter will pay off in terms of activity and price premiums (Paper A and Paper B). Second, in case of failure to meet the expectations of collaborators in the past, suppliers are advised to choose their response strategy depending on their level of control over the matter of complaint (Paper C and Paper D).

Sharing economy users on the demand side also benefit from the thesis' insights. They are recommended to carefully examine the online sharing offers to avoid low-quality listings and, correspondingly, unpleasant joint consumption (Paper A and Paper B). When scrutinizing online reviews from previous peers about an offer, consumers should consider not only the feedback's validity but also the supplier's reaction to it. The reason for critique may be already eliminated and not an obstacle to having a nice experience anymore. Furthermore, from the host's or driver's written response, consumers may guess how cooperative and flexible a potential co-sharer is (Paper C and Paper D). The findings from Paper E increase the applicants' awareness regarding their online image. We demonstrate that not every self-disclosure is advantageous and some choices (e.g., wearing sunglasses or submitting dark photos) produce a reverse effect. In line with the common wisdom "You never get a second chance to make a first impression," consumers should consider that mindfulness about their online profile increases the chances to be accepted.

In the communication context, our findings target mobile app providers and producers of ICT devices. Problematic smartphone use calls for new innovative solutions that allow for instant feedback and prevent distractions. Moreover, an application that monitors phubbing activities

may be a sensible approach since it informs a user about the exact time spent inefficiently while they were supposed to learn or spent time together with a partner (Paper F and Paper G).

Smartphone users are now better informed about the detrimental effects of technology distractions on education (Paper F) and romantic (Paper G) outcomes. Empowered with this knowledge, individuals are assumed to make deliberate choices. Considering both self-related and other-related implications of phubbing, we believe users will adjust their technology use, if suboptimal, for the sake of their own benefits and as a sign of empathy towards their partners.

10.3 Conclusion

In conclusion, this thesis provides a further step towards understanding the implications of ICT-enabled connectedness. We spotlight two main areas that are affected by the transformation – business and communication. First, we examine the sharing economy that facilitates the exchange of resources among individuals connected through a platform, mainly focusing on uncertainty and information-based cues to mitigate it. Second, in the communication context, we inspect the link between interruptions caused by the ICT use and communication outcomes in romantic and academic domains. We hope that our results open new ground for future analyses of sharing platforms and ICT-mediated communication, and can provide respective decision-makers with actionable recommendations.

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Appendix

Appendix A: Summary of Studies on Joint Consumption in Sharing Arrangements

Table A1. Review of Extant Literature on the Importance of Joint Consumption, Value co-creation and Communication with the Supplier in the Sharing Encounters

Study	Context	Sample & Method	Main outcomes
Guttentag, D., Smith, S., Potwarka, L., & Havitz, M. (2018)	Airbnb	N=844, Canada & US, Survey, cluster analysis	Guests are attracted by both practical and experiential attributes. EFA identified five motivating factors – Interaction, Home Benefits, Novelty, Sharing Economy Ethos, and Local Authenticity.
So, K. K. F., Oh, H., & Min, S. (2018)	Airbnb	N=500, US, survey, SEM	Home benefits, enjoyment, social influence →Attitude (+) Enjoyment, social influence →Behavioral intention(+)
Zhang, T. C., Jahromi, M. F., & Kizildag, M. (2018)	Airbnb	N=490, survey, SEM	Pre-consumption stage: functional value (+), social value (+), emotional value (ns) →WTP premium price Mid-consumption stage: functional value (+), social value (+), emotional value (+) →WTP premium price Post-consumption stage: functional value (ns), social value (+), emotional value (ns) →WTP premium price
Liu, S. Q., & Mattila, A. S. (2017)	Airbnb	N=139, online experiment, US, ANCOVA	Powerless participants respond more favorably to the belongingness appeal of the Airbnb ad, whereas powerful participants react more positively to the uniqueness appeal in terms of click through and reservation intention.
Camilleri, J., & Neuhofer, B. (2017)	Airbnb	850 review posts on Airbnb listings in Malta	Six distinct practices were identified that shape guest-host practices and value formation in Airbnb: (1) “welcoming”; (2) “expressing feelings”; (3) “evaluating location and accommodation”; (4) “helping and interacting”; (5) “recommending”; and (6) “thanking”.
Johnson, A. G., & Neuhofer, B. (2017)	Airbnb	942 reviews on Airbnb listings in Jamaica, content analysis	Three main categories were identified: 1. Value co-creation resources: (a) the Airbnb home, (b) places in the local community and (c) the Airbnb host as a distinct value creating actor 2. Guest-host value co-creation practices: (a) touring like a local, (b) cooking and cleaning at home, (c) cultural learning about Jamaica and (d) relaxing with a view. 3. Value co-creation outcomes: (a) testimonials on authenticity, (b) recommendations to prospective Airbnb guests and (c) repeat visitation intention.
Lin, H. Y., Wang, M. H., & Wu, M. J. (2017)	Airbnb	N=408, survey, PLS, UTAUT2 model	The results reveal the following: (1) Behavioral intention is positively affected by hedonic motivation, price value and habit. (2) User behavior is positively affected by habit, facilitating conditions and behavioral intention. (3) This research model has

			explanatory power of 68% for behavioral intention and of 51% for user behavior.
Mao, Z., & Lyu, J. (2017)	Airbnb	N=624, survey, US, SEM	Unique experience expectation (+), perceived value(+), perceived risk(-) →Attitude(R2=0,65) Unique experience expectation (+), Attitude(+), Subjective norms (+), Familiarity (+), eWOM(+)→Repurchase intention(R2=0,71)
Poon, K. Y., & Huang, W. J. (2017)	Airbnb	N=248 (119 users, 129 non-users) in Hong-Kong, survey, ANOVA	Airbnb users placed more importance on "price," while non-users placed more importance on "service." Airbnb users were also more concerned with "security."
Tussyadiah, I. P., & Zach, F. (2017)	Airbnb	41,560 reviews from 1,617 property listings, Portland, US; lexical analyses	Attributes frequently mentioned in guest reviews are associated with location (proximity to the point of interest and characteristics of the neighborhood), host (service and hospitality), and property (facilities and atmosphere). Reviews focusing on location and feeling welcome are consistently linked with higher rating scores.
Bucher, E., Fieseler, C., & Lutz, C. (2016)	Airbnb	N=491, survey, SEM, USA	Monetary motives e "I share because it is economically wise"→Attitude (+)→Intention to share (+) Moral motive e "I share because it is the right thing to do"→Attitude (+)→Intention to share (+) Social-hedonic motive e "I share to connect with others"→Attitude (+)→Intention to share (+)
Hamari, J., Sjöklint, M., & Ukkonen, A. (2016)	Sharetribe	N=168, survey, SEM	Sustainability(+), enjoyment (+) →Attitude(R2=0,750) Attitude(+), enjoyment (+), economic benefits(+)→Behavioral intentions (R2=0,663)
Hawlitschek, F., Teubner, T., & Gimpel, H. (2016, January)	apartments, ride sharing, peer-to-peer car rental	N=657, survey, cluster	Enjoyment in Sharing, Modern Lifestyle, Sense of Belonging, Social Experience, Social Influence are significantly positively correlated with the intensity of sharing for both consumers and providers
Jung, J., Yoon, S., Kim, S., Park, S., Lee, K. P., & Lee, U. (2016, May)	Couchsurfing vs Airbnb	N=1161 for Couchsurfing and N=1042 for Airbnb, context analysis	Analysis of host profiles and guest review data from Airbnb and Couchsurfing showed the human relationship, rather than a house, is the primary shared asset and the primary satisfaction feature for users of Couchsurfing. Airbnb users are more focused on the house.
Lampinen, A., & Cheshire, C. (2016, May)	Airbnb	12 interviews with hosts, San Francisco, USA	Opportunities to meet people and have enjoyable company was an essential motivation for hosting. Motivation to social interaction is not crowded out but rather facilitated by financial benefits.
Yang, S., & Ahn, S. (2016)	Airbnb	SEM	Enjoyment and reputation showed a positive influence on users' attitude toward Airbnb. However, the other two motivations, sustainability and economic benefits, turned out to be insignificant. Mobile users' perception of Airbnb security
Bellotti, V., Ambard, A., Turner, D., Gossmann, C., Demkova, K., & Carroll, J. M. (2015, April)	Peer-to-peer services	Interviews with 45 users and 23 platform employees or founders, content analysis	Users are attracted to platforms where they can connect with other people and forge relationships or simply enjoy the company of others.

Stors, N., & Kagermeier, A. (2015)	Airbnb	N=271, Germany, survey with users 25 interviews with hosts	Survey resulted in two leading motivational dimensions 1) Monetary dimension 2) Interaction between hosts and guests as part of the visitor experience Interview added another dimension: Individuality of the facilities
Yannopoulou, N., Moufahim, M., & Bian, X. (2013)	Couchsurfing vs Airbnb	170 online pages, 50 photographs and videos, discourse analysis	Brand identity of CS focuses on human relationships and cultural diversity, for Airbnb it is based on people's stories. The Airbnb website emphasizes the role of the host and puts forward the accommodation. Both brands are identical on the social dimension (meaningful inter-personal exchanges and friendship) and the collapse of the private sphere (access and authenticity).
Monchambert, G. (2019)	BlaBlaCar	1700 individuals from France, DCE	Co-travelers incur a "discomfort" cost of on average 4.5 euros per extra passenger.
Setiffi, F. & Lazzer, G. (2018)	BlaBlaCar	70 semi-structured interviews with users, Italy	Beside economic benefits, fun and belonging to community are the factors to use BlaBlaCar. Vision of the 'stranger' that is changing. With experience, sharing involves a willingness to meet new people and to have a more pleasant and enjoyable trip through mutual collaboration. Environmental benefits are not pronounced.

Appendix B: Overview of Information Cues Available via Largest Sharing Platforms

Table B1. Information Cues in the Accommodation Sharing Context

Cues available on the platform for consumers	Airbnb	Homeaway/ VRBO	Flipkey	Homestay	9flats	HouseTrip	HomeExchange/ GuesttoGuest	Couchsurfing
Name of a host	x	x	x	x	x	x	x	x
Photo of a host	x	x		x	x		x	x
Verifications	phone number, e-mail, offline ID	phone number, offline ID	phone number available	phone, e-mail	verified host	phone number available	phone number, address, offline ID,e-mail	phone number, address, offline ID
Photo of apartment	x & verification	x	x	x	x	x	x	x
Amenities	x	x	x	x	x	x	x	x
Safety features		x		x				
Location area	x	x	x	x	x	x	x	x
"About me" field	x	x	x	x	x	x	x	x
Response rate	x	x	x	x	x	x	x	x
Response time	x			x	x		x	
Membership duration	x	x	x	x		x	x	x
Reviews	x	x	x	x	x	x	x	x
Star/point rating	x	x	x	x	x	x	x	x
References	x							x
Social connection	Facebook				Inner SNS			Inner SNS
Interaction with guests	x		x			x		
Languages spoken	x	x	x		x	x	x	x
House rules	x	x	x	x	x	x	x	x
Other				On a typical day… When I host guests… Family Hobbies			Groups Clubs Preferred destinations	Why I use Couchsurfing? Music, films and books A great experience that I made Teach, learn, share What I can share with hosts Countries visited, Countries where I lived Education, Occupation, Groups

Source: Own research as of July 2019. Note: SU- supplier uncertainty, RU-resource uncertainty, CU-collaboration uncertainty

Table B2. Information Cues in Ridesharing Context									
Cues available on the platform for consumers	BlaBlaCar (65 million users, 22 countries)	Fahrgemeinschaft.de (1.5 million users, Germany)	Pop-a-Ride (175000 users, Canada)	Wunder (>2 million users, 12 countries)	TwoGo (Germany)	Traeguate (Guatemala)	Netlift (Canada)	Icarpool (USA)	Jiffy Rides (USA)
Name of a driver	x	x	x	x	x	x	x	x	x
Photo of a driver	x	x	x	x	x	x	x	x	x
Age of a driver	x	x	x						
Verifications	phone number, e-mail	phone number, e-mail are visible	phone number, e-mail, ID/driving license	phone number, address, ID/driving license	phone number, e-mail are visible	phone number, e-mail	phone number, e-mail	phone number, e-mail	phone number, e-mail
Driving style	x		x						
Model of a car	x	x	x	x	x	x	x	x	x
Color of a car	x		x	x	x		x	x	x
Photo of a car	x		x		x			x	x
Amenities of a car	x		x						
Safety features of a car	x		x						
Other characteristics of a car	type, age, number	number	winter tires	number	number		year	number	
Route description	x	x	x	x	x				
"About me" field	x	x what I like, what I don't like	x	x		x	x occupation	x	x
Membership duration	x		x	x	x	x		x	
Reviews of a driver	x		x	x		x	x	x	x
Star/point rating of a driver	x	x	x	x			x	x	x
References of a driver	x		x						
Social connection of a driver	number of FB friends		number of FB friends	number of FB friends					

Preferences of a driver	chattiness, music, smoking, pets	smoking, pets interests (sport & fitness, hobbys & free time, travel & vacation)	chattiness, smoking, pets						
Other characteristics of a driver			signed community agreement (no cash, respond quickly, be on time) response rate response time						
Name of a co-traveler	x		x						
Photo of a co-traveler	x		x						
Age of a co-traveler	x		x						
Preferences of a co-traveler	chattiness, music, smoking, pets		chattiness, music, smoking, pets						
"About me" field a co-traveler	x		x						
Membership duration	x		x						
Reviews of a co-traveler	x		x						
Star/point rating of a co-traveler	x		x						
Other characteristics				Route tracking	option to invite colleagues via e-mail				

Source: Own research as of July 2019.

Note: SU- supplier uncertainty, RU-resource uncertainty, CU-collaboration uncertainty

Appendix C: Results of Focus Group Interviews

Table C1. Demographics of Participants of Focus Group Interviews

	Gender	Age	Major	Country of origin	Frequency of use of SE services	Role	Platforms used	Experience
1	Male	22	Informatics	Turkey	every 3-4 months	C	Airbnb	Rather positive
2	Female	23	Political Science	Denmark	rarer/never	C	Other	Mixed
3	Male	25	Business Administration	Switzerland	rarer/never	C	Airbnb	Rather positive
4	Male	22	Informatics	Slovakia	every 3-4 months	C	Other	Very positive
5	Female	20	German/English	Italy	every 3-4 months	C	Airbnb	Mixed
6	Male	19	Education	Netherlands	rarer/never	C	Airbnb	Rather positive
7	Other	20	German/English	France	1-2 times a year	C	Airbnb	Rather positive
8	Female	20	International Politics	Italy	every 3-4 months	C	Airbnb	Very positive
9	Male	23	Political Science	Italy	every month	P	Airbnb	Rather positive
10	Female	20	German/English	Italy	1-2 times a year	C	Airbnb	Rather positive
11	Male	26	Law	Hungary	rarer/never	C	Other	Mixed
12	Male	22	Animation	Australia	every 3-4 months	C	Airbnb	Rather positive

Note: C-customer, P-Provider

Table C2. Summary of Concerns Related to Engaging in Sharing Transactions			
Category	Main Idea	Frequency	Example Quotes from Respondents
Supplier-related concerns	Competence	1 (8.3%)	"It was like 5 minutes away and we went there 15 minutes" (P2.1)
	Provider identity	1 (8.3%)	"You don't always know what you expect. It will happen that you have to clean your room because I don't know who is the owner of the flat and I don't know who is the driver". (P2.4)
	Reliability/ punctuality/ flexibility	4(33.3%)	"It is not always reliable…not sure actually I think most of the time it is reliable" (P1) "You never can be sure" (P2) "I would be scared about punctuality. If I would go to an airport, I would never go by BlaBlaCar. When something goes wrong: oh sorry, man, will be 20 minutes late" "If there are people who use the same shared car, they don't wait, I mean just five minutes or 10 and they go"
Supplier- / Collaboration-related concerns	Fear of strangers	2(16.7%)	"I was really scared because I started using it the first year when I was nineteen. I remember the first time I took it, it was a car with fifty years old man and I was like…ok, I gonna try it…and yeah… the website makes me feel sure because he collected with this feedback system" (P3) "Sexual pressure, a customer may freak out…spooky situations"
Collaboration-related concerns	Interaction flow	3 (25%)	"You don't know should we talk as friends or should we keep it on a formal level. And if it's only a formal level conversation easily runs out and it's easily gets a little awkward" (P2.2) "If we have to spend a long time together, it's important. It will be nice if it's a nice person or just a not so weird person" (P2.4) "I don't like silence so…I am always like hmmm heyyyy…what is wrong? But then of course when he does want to speak with me, it happened once, I just shut up and didn't do anything" (Girl, FG1)
	Personal mismatch	2 (16.7%)	"Maybe you can find somebody…who don't share the same idols, interest or so" (P3) "If the guest is not respectful with personal things …or if he stole something" (P2)
Resource – related concerns	Cleanliness, no bed	3 (25.0%)	"It didn't have any beds. We spend the first day just cleaning because it was really dirty" (P2.5) "If it's a messy" (P2) "A map said it was in the center of town and but it actually wasn't in the center of town. She drove us 10 minutes by car, like an hour by walking …and it was a small apartment and it said it had 3 bed but two of the beds were really disgusting, with dog hair and stuff like that" (P5)
Other	Legal aspects	2(16.7%)	"Legal aspects are weak comparing with for example the booking of traditional offers" (P2.3) "You don't know if they [drivers] pay the taxes so you don't know if it's legal or not" (P2.2)

Appendix D: Scenario of a Ridesharing Opportunity

All scenarios began with a setup in which participants were asked to imagine that they were planning a trip from London to Glasgow and looking for a ridesharing opportunity as a cheaper way to travel (Figure D1). To avoid reputation effects likely for well-established platforms, we named our marketplace "Join&Joy".

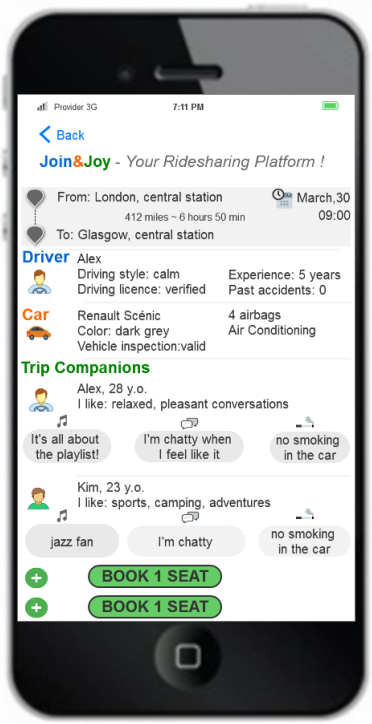
Figure D1. Example of the Introductory Scenario Presented to the Participants

On the following page, participants were randomly assigned to one of eight experimental treatments (Figure D2). Because the majority of real users take key actions on mobile (de Quercize 2017), we developed the screens for a smartphone application.

The "look and feel" of the app, as well as its functionality, was kept similar to existing market players. Being guided by the appearance and availability of cues on real platforms (Appendix

B, Table B2), we included information about the trip, the driver, the car, the co-travelers and a booking opportunity in the scenarios.

Now imagine that during the search, you have found the following offer.



Now imagine that during the search, you have found the following offer.

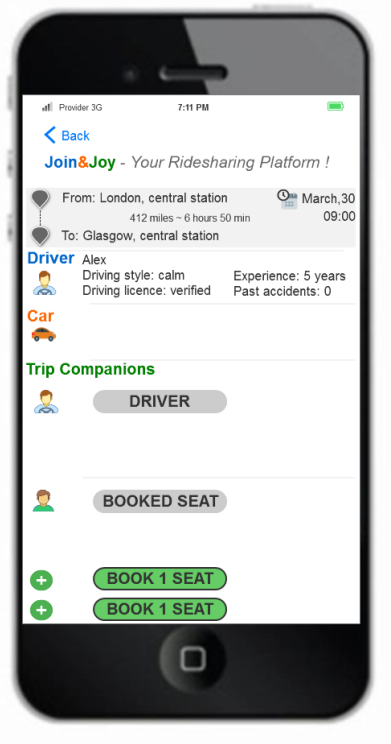


Figure D2. Examples of Mock-ups (Treatments) Presented to the Participants

Left - Design #7: Information about supplier (driver): present | Information about resource (car): present | Information about collaborators (co-travelers): present

Right- Design #1: Information about supplier (driver): present |Information about resource (car): absent | Information about collaborators (co-travelers): absent

Trip details contained the departure and arriving point, data and time, estimated distance and traveling time. These fields were required to be filled in adequately since plausibility checks are usually built-in on ridesharing platforms.

The field with the information about the driver included the name, details on the driving style, verification of the driving license, experience and the number of past accidents. This collection of cues was assumed to mitigate supplier uncertainty.

The field with the information about the car specified the model, color, validity of the technical inspection, security and comfort features. This collection of cues was supposed to mitigate resource uncertainty.

The field with the information about the co-travelers elaborated on the personalities of the trip companions, describing who would be riding with a respondent, what their interests and preferences were. This collection of cues was thought to diminish collaboration uncertainty.

Responding to the growing number of concerns about digital discrimination on sharing platforms driven by appearance (Edelman et al. 2017; Ahuja and Lyons 2019), we opted for avatars. To minimize confounding factors, gender-neutral names and interests were used. To ensure the signaling power in our experiment, cues were either present as a bundle or absent.

Appendix E: Overview of Experiment Flow

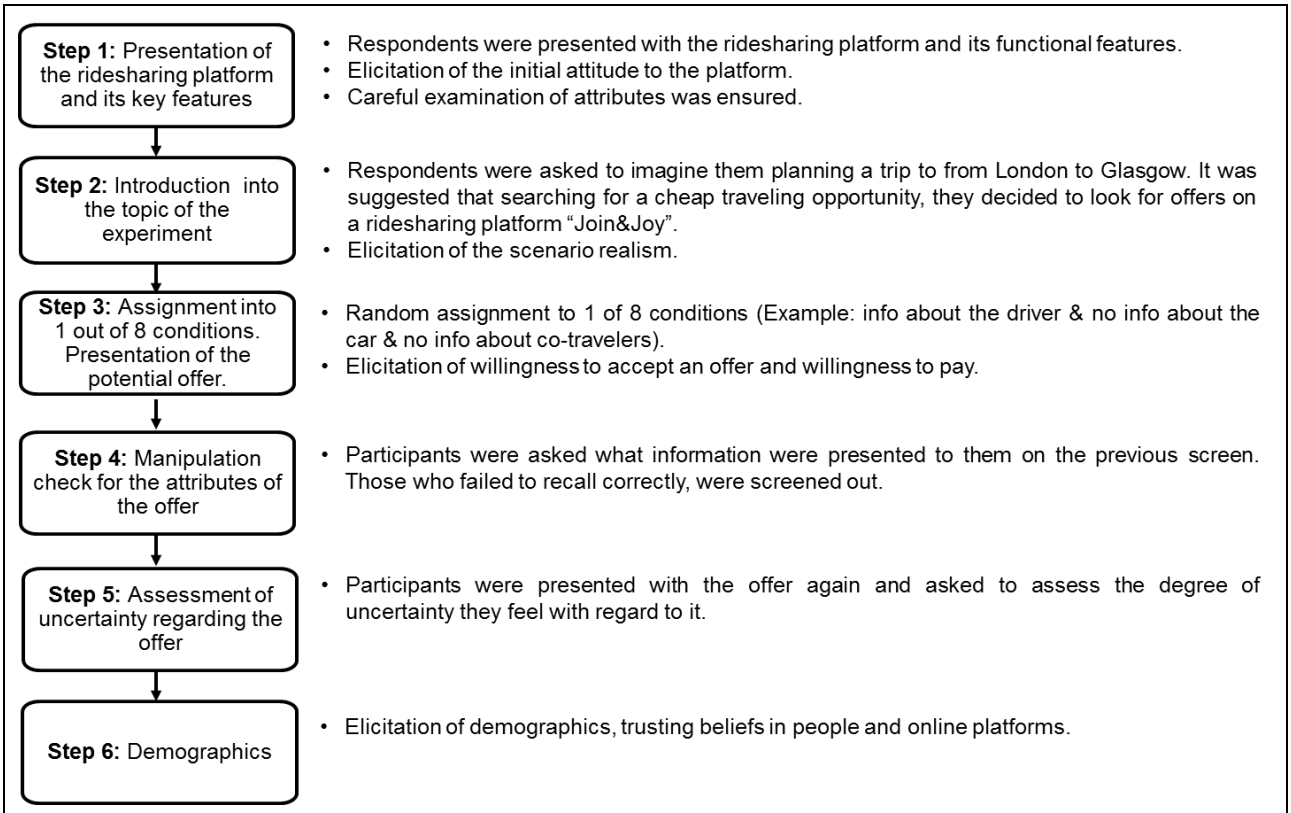


Figure E1. Flow of the Experiment

Appendix F: Survey Instrument

Table F1. Operationalization of Study Constructs		
Collaboration Uncertainty: developed for the current study		
Please rate the degree of uncertainty you feel with regard to the co-travelers involved in this offer: (7-point Likert scale; 1= strongly disagree to 7= strongly agree)		
CU1	I know what I need to about the personality of the co-travelers from the description on the platform. *[Structural Uncertainty]*	Self-developed based on FG
CU2	**I am afraid that the co-travelers have not thoroughly described their interests on the platform. *[Structural Uncertainty]***	Self-developed based on FG
CU3	**I am concerned that the co-travelers have not sufficiently portrayed their preferences on the platform. *[Structural Uncertainty]***	Self-developed based on FG
CU4	**I am unsure what the co-travelers are like from the description on the platform. *[Structural Uncertainty]***	Self-developed based on FG
CU5	It is difficult for me to gauge the level of sociability of the co-travelers. *[Structural Uncertainty]*	Self-developed based on FG
CU6	**I am afraid that the co-travelers have shirked to disclose relevant information about themselves. *[Structural Uncertainty]***	Self-developed based on Dimoka et.al. 2012
CU7	I am concerned that the co-travelers have intentionally withheld important details about themselves. *[Structural Uncertainty]*	Self-developed based on Dimoka et.al. 2012
CU8	I am afraid that the atmosphere during the trip with these co-travelers could be strained. *[Strategic Uncertainty]*	Self-developed based on FG
CU9	**I am doubtful that this trip will involve a pleasant social interaction with these co-travelers. *[Strategic Uncertainty]***	Self-developed based on FG
CU10	I am concerned whether these co-travelers will be pleasant people to talk to during the trip. *[Strategic Uncertainty]*	Social attraction scale (Antheunis et al., 2010)
CU11	**I am fearful that this trip could be accompanied by some tension between the co-travelers. *[Strategic Uncertainty]***	Self-developed based on FG
CU12	I am concerned whether I will get along with these co-travelers. *[Strategic Uncertainty]*	Social attraction scale (Antheunis et al., 2010)
CU13	I am sure I will enjoy spending time with these co-travelers. (reverse) *[Strategic Uncertainty]*	Interpersonal attraction scale (Stürmer et al. 2005)
CU14	I feel that dealing with these co-travelers involves a high degree of uncertainty. *[Overall]*	
Supplier Uncertainty (Dimoka et al., 2012)		
Please rate the degree of uncertainty you feel with regard to the driver involved in this offer: (7-point Likert scale; 1= strongly disagree to 7= strongly agree)		
SU1	I am afraid that the driver has shirked to disclose relevant information about his driving expertise. *[Adverse Supplier Selection]*	
SU2	**I am fearful that the driver has intentionally withheld important details about his driving skills. *[Adverse Supplier Selection]***	
SU3	I am unsure about the driving competence of the driver. *[Adverse Supplier Selection]*	
SU4	It is difficult for me to assess driving skills of this driver. *[Adverse Supplier Selection]*	
SU5	**I am concerned that the driver is a fraud. *[Adverse Supplier Selection]***	
SU6	**I am afraid that the driver's account is fake. *[Adverse Supplier Selection]***	
SU7	**I am concerned that this driver may renege on our agreement. *[Supplier Moral Hazard]***	
SU8	**I am concerned that this driver might deviate from his/her plans for the exact route (e.g. make detours or unplanned stops during the trip) *[Supplier Moral Hazard]***	
SU9	I am afraid that this driver may cancel the deal at the last minute. *[Supplier Moral Hazard]*	
SU10	I am doubtful that this driver will pick me up as promised in a timely manner. *[Supplier Moral Hazard]*	
SU11	**I am afraid that this driver may attempt to defraud me. *[Supplier Moral Hazard]***	
SU12	I am confident that this driver will bring me to the destination safely. (reverse) *[Supplier Moral Hazard]*	
SU13	I am fearful that dealing with this driver involves a high degree of uncertainty about his driving competences. *[Overall]*	
Resource Uncertainty (Dimoka et al., 2012)		
Please rate the degree of uncertainty you feel with regard to the car involved in this offer: (7-point Likert scale; 1= strongly disagree to 7= strongly agree)		

RU1	**I am afraid that the car has not been thoroughly described to me on the platform. *[Description Uncertainty]***	
RU2	I am concerned that the description on the platform has not adequately portrayed the car. *[Description Uncertainty]*	
RU3	I am confident I could spot defects of the car from the description on the platform. (reverse) *[Description Uncertainty]*	
RU4	I am certain that I know what I need to about the car from the description on the platform. (reverse) *[Description Uncertainty]*	
RU5	**I am afraid that this car might break down during the trip. *[Performance Uncertainty]***	
RU6	**I am concerned that the car could have unforeseen technical issues during the trip. *[Performance Uncertainty]***	
RU7	**I am fearful about the performance of this car during the trip. *[Performance Uncertainty]***	
RU8	I am afraid that the manner by which this car was driven before may negatively affect its operation during the trip. *[Performance Uncertainty]*	
RU9	I am concerned that traveling with this car will be unsafe. *[Performance Uncertainty]*	
RU10	**I am afraid that traveling with this car will be uncomfortable. *[Performance Uncertainty]***	
RU11	I am fearful that choosing this car involves a high degree of uncertainty about its actual condition. *[Overall]*	
Willingness to accept an offer (Wang and Sun, 2010) (7-point Likert scale; 1= strongly disagree to 7= strongly agree)		
accept1	**I am likely to choose this ridesharing offer.**	
accept2	**I think this offer is worth considering.**	
accept3	**I could imagine sharing this ride.**	
Price premium **The average price for a similar distance on this platform is 45 GBP. Looking at the offer above, what is your maximum willingness-to-pay for it?** (free field) Price premium was computed as the difference between maximum willingness-to-pay and the average price (i.e., 45 GBP)		
Perceived usefulness of the platform (Malhotra et al. 2005) **Overall, what do you think of the ridesharing platforms such as "Join&Joy" as a passenger?** (7-point Likert scale; 1= strongly disagree to 7= strongly agree)		
use1	**I would find this kind of ridesharing platform useful in city-to-city journeys.**	
use2	**Using this kind of ridesharing platform would make it easier to travel.**	
use3	**Using this kind of ridesharing platform would improve my travel experience.**	
Propensity to trust online sharing platforms (Stewart, 2006) (7-point Likert scale; 1= strongly disagree to 7= strongly agree)		
Trust_plat1	**Most online sharing platforms are run competently.**	
Trust_plat2	**On most online sharing platforms, you will get honest replies to your questions and concerns.**	
Trust_plat3	**On most online sharing platforms, you can get an honest description of the offer.**	
Propensity to trust people (Pavlou and Gefen, 2005) (7-point Likert scale; 1= strongly disagree to 7= strongly agree)		
Trust_peop1	**I usually trust people unless they give me a reason not to trust them.**	
Trust_peop2	**My typical approach is to trust people until they prove I should not trust them.**	
Trust_peop3	**I generally give people the benefit of the doubt.**	
Frequency of use **How often have you used ridesharing platforms in the past (e.g., Blablacar, Mitfahrgelegenheit, Poparide or Flinc)?** (1=Never and I cannot imagine to use them; 2=Never but I can imagine to use them in the future;3=Rarely; 4=Occasionally;5=Sometimes; 6=Frequently;7=Usually; 8=Every time)		
Age **What is your age?** (free field)		
Gender **To which gender identity do you most identify?** (1=Male, 2=Female, 3=Other)		
Income **Please specify your current yearly net income** (1=Less than £20,000 per year; 2=£20,000 to £34,999 per year;3=£35,000 to £49,999 per year; 4=£50,000 to £74,999 per year;5=£75,000 to £99,999 per year; 6=Over £100,000 per year)		

Note: items selected in bold were used in the final SEM

Appendix G: Quality Assurance of the Experiment Data

Several strategies were employed to ensure the proper quality of the data. To prevent "bad" responses, we first used our best efforts to arrange the survey as comprehensive and interesting as possible. Taking into account that participants' patience and concentration decreases by the umpteenth question, we used the feedback from the pretests to optimize the survey length.

Second, individuals were given a financial incentive of £1.30. According to the rules of the Prolific Academic research platform, the participants are paid after their answers undergo a review and no indication of misconduct is noticed. Thus, the system gave participants a strong incentive to put the required effort into the processing of the survey. Three pre-selection criteria were applied to define the audience: 1) participant is a fluent English speaker, 2) approval rate is at least 95%, 3) a number of previous submissions is at least 60.

To detect "bad" responses, during the survey, the following checks were embedded (Table G1).

Table G1. Measurement Items to Check for Satisficing	
Scenario realism (Siponen and Vance, 2010) **Please indicate your level of agreement with the following statements about the scenario above.** (7-point Likert scale; 1= strongly disagree to 7= strongly agree)	
Real 1	**It is realistic that I consider such a platform when planning this trip.**
Manipulation check **Recalling the ridesharing offer on the previous page, what information was provided to you as a potential passenger? The offer contained information about:** (1=yes; 2=no; 3=I cannot recall)	
MC_driver	**the driver (esp. verification of the driving license, driving style, experience and past accidents)**
MC_car	**the car (esp. model, color, technical inspection, comfort features, security features)**
MC_cotravel	**the co-travelers (esp. music preferences, chattiness, smoking preferences)**
Attention check (Oppenheimer et al. 2009) **Please mark here "Strongly agree" to answer this question.** (7-point Likert scale; 1= strongly disagree to 7= strongly agree)	
Bot check (Dupuis et al. 2018) **What is 12-8?** (free field)	

We controlled whether our interviewees perceived the introductory scenario as realistic by asking them to indicate the level of agreement of the following statement: "It is realistic that I consider such a platform when planning this trip" (Siponen and Vance, 2010). Since answer options were offered as a 7-point Likert scale (1= strongly disagree to 7= strongly agree), we verified that responses differed from 4 (neither agree nor disagree). T-test for the entire sample indicates that respondents see the scenario as believable ($M=4.61$, $p<0.000$). This also holds on a group level, with the mean value significantly different from 4 (neither agree nor disagree) for the majority of groups. For group 5 ($M=4.48$, $p=0.115$) and 7 ($M=4.40$, $p=0.129$), the

differences did not pass the conventional significance threshold. The non-parametric alternative, the *Wilcoxon signed-rank test, lead to the same conclusions (Table G2).*

Table G2. Check for Scenario Realism

Group	N	Mean	SD	Std. Error	95% CI for Mean		T-test Ho: mean=4		Wilcoxon test Ho: median=4	
					Lower Bound	Upper Bound	Mean difference	p-value	Median	p-value
1	33	4.64	1.917	0.334	3.96	5.32	0.636†	0.066	5	0.097
2	34	4.59	1.635	0.280	4.02	5.16	0.588*	0.044	5	0.043
3	35	4.77	1.664	0.281	4.20	5.34	0.771*	0.010	5	0.015
4	33	4.76	1.501	0.261	4.23	5.29	0.076*	0.007	5	0.010
5	42	4.48	1.916	0.296	3.88	5.07	0.476	0.115	5	0.147
6	30	4.77	1.794	0.328	4.10	5.44	0.767*	0.026	5	0.044
7	50	4.40	1.829	0.259	3.88	4.92	0.400	0.129	5	0.142
8	42	4.60	1.499	0.231	4.13	5.06	0.595*	0.014	5	0.014
Total	299	4.61	1.716	0.099	4.41	4.80	0.605*	0.000	5	0.000

Note: †p<0.1, *p<0.05

To ensure whether manipulations had the intended effects, we implanted a manipulation check in the survey. Initially, participants were presented with the treatment and asked to scrutinize a ridesharing offer. After that, they were forwarded to the next page where they had to recall what information was in the listing (Table G1). Those who failed were screened out and could not proceed with the survey.

To identify inattentive respondents in our self-administered survey, an instructed response element (Gummer et al. 2018) was implemented. Expressly, an item "Please mark here "Strongly agree" to answer this question" was included at a random place in a construct in the middle of the questionnaire. Participants who failed were screened out and could not proceed with the survey.

Finally, responding to the growing number of concerns about bots contaminating online research data (Baxter 2016), at the bottom of the survey, a bot check was performed ("What is 12-8?") (Dupuis et al. 2018).

Appendix H: Descriptive Statistics

Table H1. Demographic Distribution of Respondent Sample

Age Group	Frequency (Percentage)
18-19	13 (4.3%)
20-29	116 (38.8%)
30-39	83 (27.8%)
40-49	51 (17.1%)
50-59	25 (8.4%)
60+	11 (3.7%)

Income	Frequency (Percentage)
Less than £20,000 per year	115 (38.5%)
£20,000 to £34,999 per year	84 (28.1%)
£35,000 to £49,999 per year	50 (16.7%)
£50,000 to £74,999 per year	33 (11%)
£75,000 to £99,999 per year	14 (4.7%)
Over £100,000 per year	3 (1%)

Education	Frequency (Percentage)
Some high school, no diploma	5 (1.7%)
High school graduate, diploma or the equivalent	46 (15.4%)
Some college credit, no degree	56 (18.7%)
Trade/technical/vocational training	18 (6%)
Associate degree	14 (4.7%)
Bachelor's degree	93 (31.1%)
Master's degree	50 (16.7%)
Professional degree	11 (3.7%)
Doctorate degree	5 (1.7%)
Other	1 (0.3%)

Occupation	Frequency (Percentage)
Employed full time	151 (50.5%)
Employed part time	44 (14.7%)
Unemployed and currently looking for work	18 (6%)
Unemployed and not currently looking for work	2 (0.7%)
Student	47 (15.7%)
Retired	7 (2.3%)
Homemaker	11 (3.7%)
Self-employed	25 (8.4%)
Unable to work	6 (2%)
Other	2 (0.7%)

Gender	Frequency (Percentage)
Male	151 (50.5%)
Female	148 (49.5%)

Appendix I: Exploratory Factor Analysis for Collaboration Uncertainty, Supplier Uncertainty and Resource Uncertainty

To investigate the internal structure of the uncertainty measure, we applied Principal Components Analysis with varimax rotation. The following criteria were used to define the number of factors to be retained: 1) The point of inflection displayed by the scree plot; 2) The eigenvalues criterion. Since several studies show that the 'eigenvalues > 1' rule leads to an overestimation of the number of factors to retain (Henson and Roberts 2006), in this study this rule was tightened to 'eigenvalues > 1.5'; 3) The 'proportion of variance accounted for' criterion. A component was retained if it minimally explained an approximate additional 5% of the variance. For the reversed worded items, the scores were so that a high value indicated the same type of response on every item.

The scree plot showed a sharp point of inflection (criterion 1) after the fourth factor (Figure I1). Only three factors had initial eigenvalues > 1.5 (criterion 2), with values ranging from 3.31 to 16.34. Of these, only the first three factors accounted for more than or approximately 5% of the variance (criterion 3). Considering the eigenvalue and the 'proportion of variance accounted for' criterion, the 3-factor solution was taken as the starting point for our analysis.

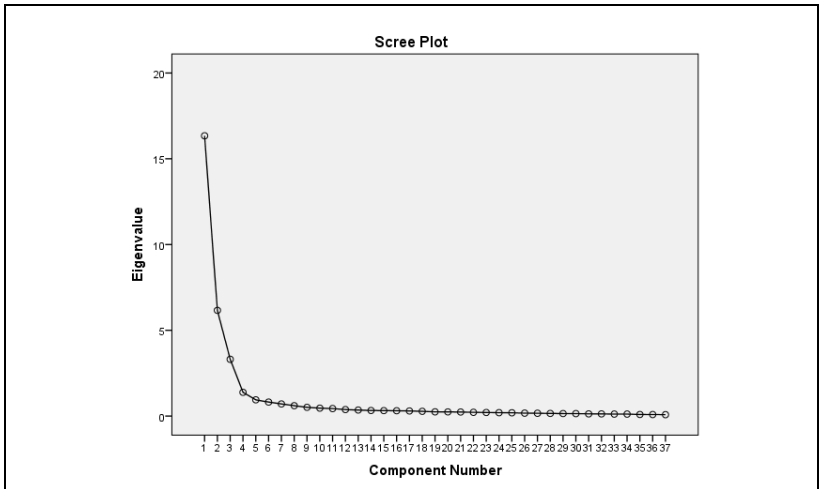


Figure I1. Scree Plot of the Eigenvalues of the Factors

The three distinct factors corresponded to the theorized constructs of collaboration, supplier and resource uncertainty. All items loaded on the latent variables they were supposed to measure. The reliability was high (Chronbach's α_{CU}=0.962, α_{SU}=0.965, α_{RU}=0.963). Item RU3 appears to be problematic because of the lower loading. In the analysis with the loosed eigenvalue criterion of 1, RU3 loads separately. Moreover, reliability measured with

Cronbach's Alpha dropped to 0.949 if RU3 is included. Therefore, we considered exclusion of this item from further analysis.

Table I1. Results of Exploratory Factor Analysis

Label	Item	Component			h2
		1	2	3	
		CU	SU	RU	
CU3	I am concerned that the co-travelers have not sufficiently portrayed their preferences on the platform. [Structural Uncertainty]	0.88	0.12	0.12	0.81
CU2	I am afraid that the co-travelers have not thoroughly described their interests on the platform. [Structural Uncertainty]	0.86	0.13	0.16	0.78
CU4	I am unsure what the co-travelers are like from the description on the platform. [Structural Uncertainty]	0.86	0.11	0.05	0.75
CU14	I feel that dealing with these co-travelers involves a high degree of uncertainty. [Overall]	0.84	0.19	0.11	0.75
CU6	I am afraid that the co-travelers have shirked to disclose relevant information about themselves. [Structural Uncertainty]	0.83	0.16	0.17	0.74
CU8	I am afraid that the atmosphere during the trip with these co-travelers could be strained. [Strategic Uncertainty]	0.81	0.15	0.13	0.70
CU5	It is difficult for me to gauge the level of sociability of the co-travelers. [Structural Uncertainty]	0.81	0.07	0.02	0.66
CU7	I am concerned that the co-travelers have intentionally withheld important details about themselves. [Structural Uncertainty]	0.80	0.24	0.14	0.72
CU9	I am doubtful that this trip will involve a pleasant social interaction with these co-travelers. [Strategic Uncertainty]	0.79	0.21	0.13	0.68
CU11	I am fearful that this trip could be accompanied by some tension between the co-travelers. [Strategic Uncertainty]	0.79	0.20	0.21	0.71
CU10	I am concerned whether these co-travelers will be pleasant people to talk to during the trip. [Strategic Uncertainty]	0.79	0.14	0.19	0.67
CU12	I am concerned whether I will get along with these co-travelers. [Strategic Uncertainty]	0.79	0.14	0.24	0.70
CU1	I know what I need to about personality of the co-travelers from the description on the platform. [Structural Uncertainty]	0.69	-0.01	0.01	0.47
CU13	I am afraid that the co-travelers have not thoroughly described their interests on the platform. [Structural Uncertainty]	0.63	0.25	0.11	0.47
SU5	I am concerned that the driver is a fraud. [Adverse Supplier Selection]	0.18	0.87	0.18	0.83
SU2	I am fearful that the driver has intentionally withheld important details about his driving skills. [Adverse Supplier Selection]	0.11	0.84	0.20	0.77
SU6	I afraid that the driver's account is fake. [Adverse Supplier Selection]	0.17	0.84	0.22	0.79
SU7	I am concerned that this driver may renege on our agreement. [Supplier Moral Hazard]	0.22	0.83	0.18	0.78
SU11	I am afraid that this driver may attempt to defraud me. [Supplier Moral Hazard]	0.21	0.83	0.22	0.78
SU13	I am fearful that dealing with this driver involves a high degree of uncertainty about his driving competences. [Overall]	0.16	0.82	0.22	0.75
SU3	I am unsure about the driving competence of the driver. [Adverse Supplier Selection]	0.06	0.80	0.24	0.70
SU8	I am concerned that this driver might deviate from his/her plans for the exact route (e.g. make detours or unplanned stops during the trip) [Supplier Moral Hazard]	0.17	0.79	0.16	0.67
SU10	I am doubtful that this driver will pick me up as promised in a timely manner. [Supplier Moral Hazard]	0.26	0.76	0.28	0.73
SU9	I am afraid that this driver may cancel the deal at the last minute. [Supplier Moral Hazard]	0.22	0.76	0.22	0.68
SU4	It is difficult for me to assess driving skills of this driver. [Adverse Supplier Selection]	0.06	0.71	0.18	0.53
SU12	I am confident that this driver will bring me to the destination safely. [Supplier Moral Hazard]	0.14	0.62	0.22	0.45
RU1	I am afraid that the car has not been thoroughly described to me on the platform. [Description Uncertainty]	0.08	0.23	0.88	0.82
RU2	I am concerned that the description on the platform has not adequately portrayed the car. [Description Uncertainty]	0.11	0.22	0.86	0.80
RU11	I am fearful that choosing this car involves a high degree of uncertainty about its actual condition. [Overall]	0.17	0.31	0.84	0.83
RU6	I am concerned that the car could have unforeseen technical issues during the trip. [Performance Uncertainty]	0.14	0.31	0.83	0.81

RU7	I am fearful about the performance of this car during the trip. [Performance Uncertainty]	0.15	0.37	0.83	0.84
RU5	I am afraid that this car might break down during the trip. [Performance Uncertainty]	0.16	0.37	0.80	0.81
RU9	I am concerned that traveling with this car will be unsafe. [Performance Uncertainty]	0.20	0.42	0.78	0.82
RU10	I am afraid that traveling with this car will be uncomfortable. [Performance Uncertainty]	0.23	0.33	0.76	0.74
RU4	I am certain that I know what I need to about the car from the description on the platform. [Description Uncertainty]	0.11	0.08	0.73	0.55
RU8	I am afraid that the manner by which this car was driven before may negatively affect its operation during the trip. [Performance Uncertainty]	0.12	0.46	0.66	0.67
RU3	I am confident I could spot defects of the car from the description on the platform. [Description Uncertainty]	0.06	-0.02	0.24	0.06
Variance Explained		**44.16%**	**16.66%**	**8.95%**	
Reliability		**0.962**	**0.965**	**0.963**	

Note: CU-collaboration uncertainty, SU-supplier uncertainty, RU-resource uncertainty, h2 - communality estimates (estimates of the proportion of variance in a given variable explained by all components jointly)

In general, these findings validate the measurement properties of three types of uncertainty in sharing arrangements and support their empirical distinction. The result also suggests the sub-dimensions of collaboration uncertainty (structural and strategic), supplier uncertainty (adverse selection and moral hazard) and resource uncertainty (description uncertainty and performance uncertainty) are not distinct in our sample, thus advising to perform an analysis using the single constructs.

Appendix J: Details of Statistical Testing

Convergent Validity

Convergent validity of a construct can be defined as the "extent to which a measure correlates positively with alternative measures of the same constructs" (Hair et al. 2014, p. 102). To ensure convergent validity in PLS, outer loadings and the average variance extracted (AVE) are examined (Table J1). We observed AVE greater than 0.5 for all reflective constructs. Since the outer loadings of all items were above 0.7 as recommended (Hair et al. 2014) and significant according to their t-statistics, all items were retained.

Table J1. Outer Loadings, t-statistics, VIF and AVE of Constructs

Construct	Item	Outer loading	t-statistic	VIF	AVE
Collaboration uncertainty	CU9	0.836	34.625	2.419	0.769
	CU11	0.854	44.209	2.634	
	CU2	0.911	79.785	4.845	
	CU3	0.914	76.735	5.111	
	CU4	0.861	46.473	3.042	
	CU6	0.882	41.361	3.408	
Resource uncertainty	RU1	0.872	52.680	3.139	0.832
	RU5	0.938	135.576	6.061	
	RU7	0.942	128.048	5.628	
	RU10	0.880	48.988	2.960	
	RU6	0.925	90.550	5.133	
Supplier uncertainty	SU2	0.857	38.286	2.734	0.802
	SU5	0.938	118.833	6.719	
	SU6	0.926	72.429	5.550	
	SU7	0.884	45.894	3.263	
	SU11	0.918	87.875	4.551	
	SU8	0.845	41.807	2.640	
Trust to people	Trust_people1	0.952	135.927	4.515	0.872
	Trust_people2	0.937	60.535	4.111	
	Trust_people3	0.912	62.285	2.977	
Trust to platform	Trust_platform1	0.854	26.478	1.917	0.806
	Trust_platform2	0.911	32.668	3.284	
	Trust_platform3	0.927	54.309	3.140	
Willingness to accept an offer	accept1	0.957	134.025	5.462	0.922
	accept2	0.961	179.069	5.896	
	accept3	0.964	145.082	6.354	
Perceived usefulness	usefulness_2	0.878	47.876	2.012	0.764
	usefulness_4	0.862	33.064	2.056	
	usefulness_5	0.881	49.362	2.023	

Discriminant Validity

To check whether the construct is distinct from others and ensure discriminant validity, the cross-loading matrix was examined. For all items in Table J2, the outer loadings were much higher than any other cross-loadings, suggesting no discriminant validity problem. Further, the Fornell-Larcker criterion is also satisfied because the square root of AVE for each construct was greater than its highest correlation with any other construct (Table J3). Taken together, these results indicate discriminant validity.

Table J2. Cross-loading Matrix

	collaboration uncertainty	resource uncertainty	supplier uncertainty	trust to people	trust to platform	willingness to accept	usefulness
CU9	0.836	0.324	0.381	-0.208	-0.242	-0.430	-0.168
CU11	0.854	0.385	0.397	-0.175	-0.253	-0.423	-0.226
CU2	0.911	0.343	0.333	-0.159	-0.248	-0.399	-0.212
CU3	0.914	0.315	0.323	-0.147	-0.211	-0.381	-0.193
CU4	0.861	0.231	0.293	-0.165	-0.238	-0.397	-0.186
CU6	0.882	0.350	0.370	-0.105	-0.185	-0.364	-0.130
RU1	0.254	0.872	0.416	-0.047	-0.134	-0.329	-0.136
RU5	0.355	0.938	0.559	-0.112	-0.186	-0.446	-0.170
RU7	0.354	0.942	0.572	-0.082	-0.138	-0.410	-0.143
RU10	0.393	0.880	0.519	-0.145	-0.180	-0.449	-0.206
RU6	0.329	0.925	0.511	-0.100	-0.191	-0.404	-0.179
SU2	0.302	0.482	0.857	-0.096	-0.185	-0.559	-0.146
SU5	0.349	0.511	0.938	-0.141	-0.196	-0.579	-0.133
SU6	0.362	0.546	0.926	-0.098	-0.164	-0.536	-0.119
SU7	0.399	0.505	0.884	-0.121	-0.209	-0.480	-0.133
SU11	0.399	0.539	0.918	-0.144	-0.164	-0.550	-0.139
SU8	0.344	0.476	0.845	-0.188	-0.234	-0.438	-0.167
Trust_people1	-0.193	-0.086	-0.157	0.952	0.451	0.295	0.314
Trust_people2	-0.157	-0.112	-0.129	0.937	0.418	0.258	0.278
Trust_people3	-0.163	-0.110	-0.119	0.912	0.437	0.254	0.271
Trust_platform1	-0.179	-0.120	-0.117	0.442	0.854	0.225	0.311
Trust_platform2	-0.201	-0.172	-0.189	0.370	0.911	0.222	0.272
Trust_platform3	-0.309	-0.196	-0.254	0.436	0.927	0.309	0.332
accept1	-0.429	-0.410	-0.557	0.276	0.281	0.957	0.415
accept2	-0.445	-0.455	-0.570	0.272	0.261	0.961	0.359
accept3	-0.443	-0.432	-0.563	0.285	0.282	0.964	0.423
usefulness_2	-0.187	-0.129	-0.116	0.289	0.323	0.375	0.878
usefulness_4	-0.161	-0.158	-0.182	0.205	0.236	0.333	0.862
usefulness_5	-0.206	-0.195	-0.114	0.306	0.331	0.377	0.881

Reliability

To examine the internal reliability of the constructs, we relied on Cronbach's alpha and composite reliability (Table J3). We observed that composite reliability and Cronbach's alpha were above 0.7 as recommended by Hair et al. (2014). Thus, reliability was confirmed for all of the scales used in the study.

Multicollinearity

To monitor the correlation between predictors, variance inflation factors (VIF) were examined. VIF > 5 indicates moderate multicollinearity, while VIF > 10 is a sign of severe multicollinearity (Larose 2015). In our case, all items showed VIF below 10, with most items having VIF below 5 (Table J1), suggesting that multicollinearity is not an issue in our model.

Table J3. Construct Correlations, AVE, Composite Reliabilities, and Cronbach's Alphas

	Fornell-Larcker criterion analysis									
	resource uncertainty	collaboration uncertainty	supplier uncertainty	trust to people	trust to platform	usefulness	willingness to accept	AVE	Composite reliability	Cronbach's Alpha
resource uncertainty	**0.912**							0.832	0.961	0.949
collaboration uncertainty	0.373	**0.877**						0.769	0.952	0.940
supplier uncertainty	0.570	0.402	**0.895**					0.802	0.960	0.950
trust to people	-0.109	-0.184	-0.145	**0.934**				0.872	0.953	0.927
trust to platform	-0.183	-0.263	-0.213	0.466	**0.898**			0.806	0.926	0.880
usefulness	-0.184	-0.213	-0.155	0.309	0.343	**0.874**		0.764	0.906	0.846
willingness to accept	-0.450	-0.457	-0.587	0.289	0.286	0.415	**0.960**	0.922	0.973	0.958

Note: The bolded values that appear down the diagonal of the table are the square roots of the AVEs for each construct.

Common Method Bias

Our study design incorporated recommendations to reduce common method bias following leading literature (MacKenzie et al. 2011; Podsakoff et al. 2003). The online experiment was implemented in the Unipark survey tool. A welcome page briefly described the goal of the study (**understanding user decisions on s**haring platforms) and guaranteed full anonymity of respondents' answers. The items were randomized within blocks based upon the Likert-scale response anchors for the items (e.g. strongly disagree to strongly agree). Moreover, the dependent variables (willingness to accept an offer and price premium) were measured before

the independent variables and the function to move back to previous survey pages was disabled to prevent participants from changing answers retrospectively. All of these remedies helped us to mitigate the risk of common method bias (Podsakoff et al. 2003).

An “attention trap” item was inserted throughout the survey. Attention trap items ask the respondent to select a particular response from the Likert-scale responses (Oppenheimer et al. 2009). For example, the respondent may be asked to “Please answer ‘Agree’ to this question.” The purpose of the trap items is to identify those respondents that are not cognitively engaged in responding to the survey and to discard those responses.

A common method bias problem can be manifested through the high correlations (>0.9) between constructs (Pavlou et al. 2007). However, the correlation matrix shows that none of the constructs correlation coefficients are above 0.9. In addition, the marker variable approach was applied to check for common method bias. Blue attitude construct (Miller and Chiodo 2008) measured with three items: ‘‘I prefer blue to other colors,’’ ‘‘I like the color blue,’’ and ‘‘I like blue clothes.’’ on a 7-point Likert scale was used as a marker variable. The correlation between the marker variable and other constructs was close to zero or very small for the majority of constructs, with a maximum value of 0.13. We examined the model with the marker variable as a predictor for endogenous constructs (Rönkkö and Ylitalo 2011). The blue attitude construct had no significant effect on willingness to accept (β=0.072, p=0.233) and price premium (β=0.078, p=0.445). Neither R2 nor path coefficients have been changed considering *precision* of *2 digits after the comma*. This further suggests a lack of common method bias.

Appendix K: Robustness Check

As a robustness check for willingness to engage in sharing transaction, we conducted a logistic regression. For the alternative model specification, the sample was sorted by the mean willingness to accept and split into two parts, with WTA≤=3 indicating a strong preference to rejection (N_{reject}=106) and WTA≥5 showing a strong preference to acceptance (N_{accept}=114). The same independent variables went into the logistic regression. The results of this alternative model support our findings, with supplier uncertainty (Wald $\chi2 = 31.9$, $p < 0.001$) and collaboration uncertainty (Wald $\chi2 = 18.8$, $p < 0.001$) driving consumers decision. The effect of resource uncertainty is marginal (Wald $\chi2 = 3.4$, $p = 0.065$) since a significance level of 0.05 is not achieved. Overall, the logistic model was highly significant ($\chi2$ (3) = 133.11, $p < 0.001$) and predicted 84.1% of the cases correctly.

Table K1. Results of Logistic Regression for Willingness to Accept (yes/no)

Dependent variable: willingness to accept (yes/no)				
	B	S.E.	Wald	p-value
Supplier Uncertainty	-1.004	0.178	31.896	0.000
Collaboration Uncertainty	-0.696	0.161	18.774	0.000
Resource Uncertainty	-0.277	0.150	3.398	0.065
Constant	8.852	1.258	49.541	0.000
Correct predictions	84.1%			

For price premium, we performed the analysis with least-squares regression. As with the structural model, we also found a negative effect of supplier uncertainty (β=-1.946, p=0.007) and resource uncertainty (β=-1.57, p=0.019) on price premium, while collaboration uncertainty did not yield significant results (β=-0.243, p=0.709). Overall, the OLS model was highly significant (F (3,298) = 11.47, p <0.001) and could explain 10.4% of variance of the dependent variable.

Table K2. Results of OLS regression for Price Premium

Dependent variable: price premium				
	B	S.E.	Standardized B	p-value
Supplier Uncertainty	-1.946	0.728	-0.188	0.008
Collaboration Uncertainty	-0.243	0.651	-0.023	0.709
Resource Uncertainty	-1.570	0.668	-0.163	0.019
Constant	8.930	3.280		0.007
R^2	10.4%			
$R^2_{adjusted}$	9.5%			

Appendix L: Mediation Analysis

Table L1. Results of the Mediation Analysis for Uncertainty

Independent Variable	Mediator	DV	Direct effect signif?	Indirect effect	p-value indirect effect	95% CI Indirect Effect	Indir. effect signif?	VAF	C signif?	Type of mediation (Zhao et al. 2010)
Supplier-related information cues	SU	WTA	YES	0.151	0.0004	[0.068;0.238]	YES	31%	YES	Complementary mediation
Resource-related information cues	RU		YES	0.069	0.0615	[-0.005;0.144]	NO	33%	NO	No-effect non-mediation
Collaboration-related information cues	CU		YES	0.100	0.0169	[0.025;0.188]	YES	42%	NO	Indirect-only mediation
Supplier-related information cues	SU	PP	YES	0.016	0.7566	[-0.087;0.119]	NO	-	YES	Direct-only non-mediation
Resource-related information cues	RU		NO	0.100	0.0466	[0.002;0.200]	YES	50%	NO	Indirect-only mediation
Collaboration-related information cues	CU		NO	0.013	0.8103	[-0.084;0.120]	NO	-	NO	No-effect non-mediation

Note: SU-supplier uncertainty, RU-resource uncertainty, CU-collaboration uncertainty, WTA – willingness to accept, PP-price premium